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Identifying ineffective monitors from securities class action lawsuits

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Abstract

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Keywords*:* Institutional investors, Securities class action litigation, Shareholder linkages, Corporate governance

JEL Classification: D21, G32, G34, K22

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Identifying Ineffective Monitors From Securities Class Action Lawsuits

Abstract

We identify "ineffective" institutional monitors based on the prevalence of occurrences of securities class-action lawsuits in their overall portfolio. We find that firms with a higher representation of such institutional investors among the firms' large shareholders have a greater likelihood of future litigation and experience more negative market reactions upon such litigation filings. These firms exhibit other unfavorable governance outcomes including poorer acquisitions and lower CEO turnover-performance sensitivity. We find suggestive evidence that ineffective monitoring may be a result of higher operational risk.

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1. Introduction

While there are collective incentives for disperse shareholders to monitor management, the lack of individual incentives creates a free-rider problem (e.g., Grossman and Hart, 1980; Bebchuk and Weisbach, 2010). Shleifer and Vishny (1986) propose that free riding can be mitigated when investor ownership is large enough to reap the benefits of implementing costly monitoring. In practice, however, large shareholders have heterogeneous monitoring incentives and abilities (e.g., Cronqvist and Fahlenbrach, 2009). Recent studies show that the unfavorable monitoring outcome of large shareholders may result from high monitoring costs, lack of effort, or limited attention (e.g., Wang, Winton, and Yu, 2010; Fich, Harford, and Tran, 2015; Kempf, Manconi, and Spalt, 2017).

If large shareholders are ineffective in monitoring management, managerial agency problems may arise leading to potential corporate misconduct. In this case, more extreme intervention may be required in the form of securities class-action lawsuits. A securities class action (SCA) lawsuit is a court action, filed on behalf of a group of shareholders, claiming violations of securities laws by corporate managers or board members. While some lawsuits are driven by lawyer fees and lack material basis, the large awarded damages suggest considerable economic harm. Estimates of aggregate settlement values from securities class-action litigations topped $68 billion from 1996-2013 (Bajaj et al., 2015). Moreover, firms experience large stock price drops upon lawsuit announcements.[1] The management and board also suffer direct consequences. Evidence suggests that SCA lawsuits hurt the reputation and employability of existing management and board members.[2]

Therefore, security class action lawsuits appear to be a severe symptom of underlying governance issues. Jensen (1993) describes these lawsuits as “blunt” instruments of last resort, filed by minority shareholders who in normal circumstances have little influence on management (e.g., Bebchuk, 2007). When monitoring is effective, minority shareholders have no reason to utilize this extreme form of

[1] In the sample we study in this paper, companies experience a -11.5% cumulative abnormal return around lawsuit announcement on average.

[2] See for example: Karpoff and Lott (1993), Srinivasan (2005), Fich and Shivdasani (2007), Brochet and Srinivasan (2014).

intervention. By contraposition, the occurrence of an SCA lawsuit represents a revealed - albeit noisy - signal of monitoring failure by large shareholders. Large shareholder monitoring is typically conducted "behind-the-scenes" and unobservable from the public view (McCahery, Sautner, and Starks, 2016). Moreover, as colorfully described in Amiram et al. (2017), SCA lawsuits are the front chapters of the novel and are the earliest detection of fraud. In this paper, we use the revelation of an SCA lawsuit as an opportunity to identify monitoring issues and take a step towards understanding how monitoring failures may arise.

We use this unique setting to develop a methodology to identify the monitoring abilities of large institutional shareholders. By analyzing an investor's portfolio track record, we can identify a group of "*litigation-prone*" large shareholders. An institutional investor may be unlucky to be a large shareholder of a single firm experiencing litigation, but serving as a large shareholder in multiple companies that are undergoing SCA lawsuits reflects an investor's general lack of ability or effort to provide effective shareholder governance. We focus on the top five largest institutional shareholders because these investors have the greatest influence over management (e.g., Hartzell and Starks, 2003; Chen, Harford, and Li, 2007). Each year, we categorize an institutional investor as a litigation-prone large shareholder if a large fraction of its holdings are in stocks where 1) the investor is a top five institutional shareholder and 2) the company is undergoing securities class-action litigation. We are careful to ensure that such lawsuits are not filed by these large shareholders themselves, which would invalidate our attempts to identify ineffective monitoring (e.g., Cheng, Huang, Li, and Lobo, 2010). We also focus on non-frivoulous lawsuits.

We test this hypothesis by examining whether firms with a higher representation of such investors are at greater risk of experiencing future litigation. We also use an external signal to cross-validate this channel and further test whether such firms are more likely to experience poorer corporate governance outcomes in the future. Finally, we provide evidence to try to understand why these shareholders tend to have monitoring failures.

Our first finding is that firms with a high fraction of litigation-prone investors among the its top five institutional investors strongly predicts future litigation. Using this litigation-prone large shareholder (LPLS) linkage measure, we find that a one standard deviation increase in the LPLS linkage measure increases future litigation risk relative to the sample average by 22% to 41%. For comparison, the economic effect is similar to the predictive power of high lawsuit industry membership. We also analyze announcement returns upon litigation filing for companies with high LPLS linkages. We expect that the intensive margin (i.e., the degree of market reaction) will be greater for companies with high LPLS linkages because market reactions capture the severity of governance issues. We find this is indeed the case. The market reactions are significantly more negative around litigation filing dates for firms with higher LPLS linkages.

Since the potential for omitted variables is likely to be high, our specifications carefully control for firm-specific factors of litigation risk identified by the academic literature (e.g., Kim and Skinner, 2012). As such, it is unlikely that firm-specific factors explain our findings. Another concern is that common ownership by large shareholders may capture underlying economic linkages not identified by firm controls, but are correlated with litigation risk. Potential economic links include industry spillover (Gande and Lewis, 2009), interlocking board relationships, geographic location, and customer-supplier relationships. We reconstruct the LPLS linkage measure only using firms subject to litigation from different industries and after excluding 1) firms that have interlocking board relationships, 2) firms from the same geographic region, or 3) firms that share customer-supplier relationships. Our inferences are unchanged using this alternative construction of the LPLS linkage measure.

As mentioned earlier, some SCA lawsuits may be driven by law firms for attorney fees (e.g., Coffee, 1985, 1986; Romano, 1991) or are unrelated to shareholder monitoring (i.e., IPO-related lawsuits). We take three steps to address these concerns. First, we begin the sample after the passage of the Private Securities Litigation Reform Act of 1995 which significantly lowered the incidence of frivolous SCA lawsuits (Ferris and Pritchard, 2001). Second, we repeat our analysis using only severe lawsuits defined as filings that either 1) eventually settled or 2) experienced large negative initial

announcement returns. We find stronger relations between the LPLS linkage measure and litigation risk using only severe lawsuits, which is consistent with frivolous lawsuits adding noise. Third, we omit IPO-related lawsuits from our sample and find the results unchanged.

An alternative interpretation is that litigation-prone investors strategically select stocks with high litigation risk characteristics. For example, litigation-prone investors may be informed investors (i.e., hedge funds) who may select such stocks in hopes of earning high short-term returns or fixing operational issues (e.g., Bethel, Liebeskind, and Opler, 1998; Brav, Jiang, Partnoy, and Thomas, 2008).[3] We note that based on our previous results, these investors would likely be selecting on unknown characteristics orthogonal to those previously identified in the literature. We take the following steps to address this issue. First, we drop hedge funds from our sample and find similar results. Second, we re-constitute the linkage measure using only investors with longer holding horizon and find that our results are stronger among these investors relative to short horizon investors. We also find our results are similar if we require the litigation-prone investor to hold the stock for at least two years before creating the linkage measure. In later analysis, we find that the portfolio returns of litigation-prone investors actually tend to underperform. While we cannot definitively rule out the selection view, our evidence generally supports the interpretation that litigation prone investors are likely to be ineffective monitors.

Our second approach to assessing the monitoring ability of litigation-prone investors is to use an external signal of underlying monitoring concerns. Specifically, we examine whether short sellers target firms with such investors. This is motivated from evidence in Karpoff and Lou (2010) that short sellers anticipate serious managerial fraud that triggers SEC investigations. Using the estimated future litigation risk from the litigation-prone shareholder linkage measure, we find that short interest increases through this channel. This evidence provides additional validation of our hypothesis and complements the findings

[3] As we discuss shortly, given that these stocks are more likely to experience SCA lawsuits and suffer extremely negative litigation announcement returns, traders that could ex-ante identify these stocks would likely earn greater profits holding short positions.

in Karpoff and Lou (2010) that informed market participants trade against underlying managerial agency problems.

Our third approach examines two additional governance outcomes: bidder announcement returns in mergers (e.g., Gaspar, Massa, and Matos, 2005; Chen, Harford, and Li, 2007), and forced CEO turnover-performance sensitivity (Parrino, Sias, and Starks, 2003). Consistent with value destruction, firms with higher LPLS linkages experience significantly lower bidder announcement returns in mergers. Such firms are also significantly less likely to dismiss their CEOs after poor past performance. The range of poor governance outcomes provides additional evidence in support of the view that litigation-prone investors are ineffective monitors of corporate management.

If these large investors are ineffective monitors, what are the economic forces acting on these institutions? We provide some anecdotal and performance-based evidence on this issue. To gain further insights, we manually identify the top 50 litigation-prone investors in our sample. 19 of these top 50 investors experienced SEC or DOJ investigations or settlements for violations of securities law. While the evidence is anecdotal, it suggests that litigation-prone investors may have serious operational risk issues that deter both monitoring and return performance. Recent studies find that operational risk related to breakdowns of internal controls and processes leads to subsequent poor performance (e.g., Brown, Goetzmann, Liang, Schwarz, 2008, 2012; Chenobai, Jorion, Yu, 2011; Dimmock and Gerken, 2012; Dimmock, Farizo, and Gerken, 2018). Therefore, if operational risk is a potential mechanism behind the failure of litigation-prone investor monitoring, we also expect to find relatively poor portfolio performance. Consistent with ineffective monitoring, the holdings of litigation-prone investors underperform by 61 basis points per quarter in raw returns or 16 basis points per quarter in DGTW (Daniel, Grinblatt, Titman, and Wermers, 1997) characteristics adjusted returns. Litigation-prone investors also have higher operational risks.

A subtle assumption is that large shareholders *should* actively monitor their portfolio companies. However, some shareholders have weaker economic incentives to intervene. These include “grey” institutions which have other business interests (e.g., Brickley, Lease, and Smith, 1988; Almazan,

Hartzell, and Starks, 2005) and shareholders with relatively smaller positions (e.g., Grossman and Hart, 1980; Fich, Harford, and Tran, 2015). Our results are significantly stronger using an *LPLS* linkage measure constructed among non-grey investors and large shareholders with relatively larger positions. This evidence is consistent with the view that we identify large shareholders who should actively monitor but fail to provide sufficient governance.

Additional tests show that the results are robust to our methodological choices. The findings are similar when defining large shareholders using the top ten shareholders or institutional blockholders with more than 1% or 5% ownership stakes. Unobserved firm heterogeneity is unlikely to explain our findings as our results hold with the inclusion of firm fixed effects. We also address the possibility that litigation-prone large shareholders may initiate SCA lawsuits themselves as a managerial disciplining tool by reconstructing the linkage measure excluding the primary institutional plaintiffs (Cheng et al., 2010) and dropping all institutional investor led SCA lawsuits. Our results remain unchanged.

An important contribution of our study is that we side-step the problem of observability by using the revealed "track record" of monitoring outcomes to uncover important clues on the efficacy of behind-the-scenes shareholder involvement.[4] Studies show that behind-the-scenes engagement with management is a key monitoring tool used by large institutional investors (e.g., Smith, 1996; Carleton, Nelson, and Weisbach, 1998; Becht et al., 2009; Dimson, Karakas, and Li, 2015; McCahery, Sautner, and Starks, 2016). Instead of focusing on a particular type of institutional investors such as activist hedge funds (e.g., Brav, Jiang, Partnoy, Thomas, 2008), we provide a more generalized view on the monitoring activism of large institutional investors. We also find that monitoring affects litigation risk, evidence that is puzzling absent from earlier literature (e.g., Daines, Gow, and Larcker, 2010; Kim and Skinner, 2012).

Our results provide suggestive evidence on the mechanism that drives monitoring performance. Prior studies find a link between better governance outcomes and investor type (e.g., Brickley, Lease, and

[4] Our identification approach of extracting monitoring ability from common ownership is to related but distinct from the growing literature on the economic incentives of common ownership (e.g., Matvos and Ostrovsky, 2008; Harford, Jenter, Li, 2011; Edmans, Levit, Reilly, 2016; He and Huang, 2017; Azar, Schmalz, and Tecu, 2017; Kang, Luo, and Na, 2017).

Smith, 1988; Almazan, Hartzell, and Starks, 2005; Gaspar, Massa, and Matos, 2005; Chen, Harford, and Li, 2007). Cornelli, Kominek, and Ljungqvist (2013) find that large shareholders use both hard and soft information when evaluating managers. Recent studies find that governance outcomes are related to monitor costs (e.g., Wang, Winton, and Yu, 2010), industry information (e.g., Kang, Lu, Na, 2017), effort (e.g., Fich, Harford, and Tran, 2015), and attention (e.g., Kempf, Manconi, and Spalt, 2017). Our evidence points to the possibility that operational issues may affect the quality of monitoring an institution can provide.

Our study also contributes to the literature on the economics of securities class-action litigations.[5] Previous studies show that industry membership, firm characteristics, and managerial characteristics affect litigation risk (e.g., Francis, Philbrick, and Schipper 1994a, 1994b; Jones and Weingram, 1996a, 1996b; Johnson et al., 2000; Kim and Skinner, 2012). Our work complements studies that examine the potential mechanisms behind potential misconduct by emphasizing the importance of internal governance failures as one important source of litigation risk.

2. Data and variables

We obtain the data on litigation filings from the Stanford Law School securities class-action clearinghouse during the period of 1996 to 2013.[6] Securities class-action (SCA) lawsuits allege that managers or board members violated rule 10(b)-5 of the SEC Act of 1934. This sample period starts after the passage of the Private Securities Litigation Reform Act (PSLRA), which requires that securities class-action lawsuits must "state particular facts giving rise to a strong inference that the defendant acted with the required state of mind."

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[5] Litigation risk affects cash holdings (Arena and Julio, 2015), IPO underpricing (Lowry and Shu, 2002; Hanley and Hoberg, 2012), M&A activity (Gormley and Matsa, 2011), financial reporting and disclosure behavior (see: Kim and Skinner (2012) for a complete summary), auditor choice (Shu, 2000), and director reputation (Karpoff and Lott, 1993; Srinivasan, 2005; Fich and Shivdasani, 2007; Brochet and Srinivasan, 2014).

[6] This is one of the most commonly used sources of security class-action litigations and its completeness has been verified in Karpoff, Koester, Lee, and Martin (2017). Kim and Skinner (2012) examine the 10-k disclosures of all S&P 500 companies from the period 2007-2009 and show that this database found all 46 cases of 10b-5 securities class-action lawsuits.

We focus on SCA lawsuits because they provide a direct mechanism for small shareholders to voice their belief that corporate insiders have engaged in wrongdoing. The implication is that SCA lawsuits are a potential signal of ineffective large shareholder monitoring. While other types of lawsuits may also provide useful signals of ineffective monitoring, we exclude them due to certain drawbacks.

For example, SEC and DOJ investigations may also imply ineffectiveness of internal monitoring. However, such lawsuits are typically more serious and thus less frequent. This would limit our inferences because our identification strategy, described in the next subsection, requires a sufficient number of litigation events. Second, using SEC cases also introduces the partial observability problem and issue of detection (e.g., Wang, Winton, and Yu, 2010; Wang, 2013; Khanna, Kim, and Lu, 2015). Kedia and Rajgopal (2011) find that the SEC may be resource constrained and are more likely to systematically investigate firms located closer to their offices. To the extent that there is no ex-ante systematic difference in the ability of a small shareholder to detect misconduct, the partial observability problem may be of a lesser concern with securities class-action lawsuits.

Shareholder derivative lawsuits may also be of potential interest because the settlements often include governance concessions. A derivative suit is a lawsuit brought by a shareholder on behalf of a corporation against a third party. However, derivative suits have substantively different implications and not suited for our research question. The key difference is that the proceeds of a successful derivative suit are awarded to the corporation and not to the individual shareholders that initiate the action. Thus, minority shareholders have much less incentive to file derivative lawsuits, making such lawsuits poor signals of ineffective large shareholder monitoring.

We collect equity holdings data of institutional investors from Thomson 13F filings. The SEC requires that all institutional investment managers with over $100 million in 13(f) securities report holdings positions each quarter. We use stock return and accounting data from CRSP and COMPUSTAT to construct firm-level variables including *firm size, market-to-book, book leverage, profitability, cash holdings, past stock returns, stock illiquidity, return volatility,* and *return skewness*. We create the *FPS dummy*, the standard measure of litigation risk, defined as a dummy variable equal to one if the firm is in

the bio-technology, computers, electronics and retail industries and zero otherwise (Francis, Philbrick, and Schipper, 1994a, 1994b). We obtain acquisition data from the SDC Platinum M&A database. CEO turnover data are provided by Dirk Jenter and used in Peters and Wagner (2014) and Jenter and Kanaan (2015).[7] The Appendix provides detailed descriptions of variable construction.

2.1 Defining litigation-prone large shareholder (LPLS) linkages

To uncover the ineffectiveness of internal governance by large shareholders, we examine large shareholders with a poor "track record" of SCA lawsuits in their portfolio companies. An institutional investor may be unlucky to be a large shareholder in a single firm subject to litigation. However, serving as large shareholders in multiple companies subject to SCA lawsuits likely reflects an investor's general lack of effort or ability to provide effective monitoring.

We start by identifying a group of large shareholders, defined as the top five largest institutional investors ranked by the amount of holdings of the company's common stock. We choose the top five shareholders in our main analysis because the previous literature shows that these investors have greater influence and economic incentives to actively monitor (e.g., Hartzell and Starks, 2003; Chen, Harford, and Li, 2007). We further require a minimum of 10 stocks in each large shareholder's portfolio to ensure that we capture institutional investors with sizable portfolios. In later analyses, we show that our results hold for alternative definitions of large shareholders.

We construct our main measure in two steps. First, among the group of large shareholders, we classify a *litigation-prone* sub-group using the following procedure. For each year *t*, we split the universe of Compustat firms into two subsamples by whether firms are subject to SCA litigation during the year. Using the methodology described above, we select the complete set of top five shareholders from all of the firms that are being sued. Among these five large shareholders, we define an investor as *litigation-prone* if the fraction of holdings of litigation stocks in its portfolio is above the sample median fraction.

[7] We thank Dirk Jenter for generously sharing the CEO turnover data.

We use the fraction of holdings to capture the investor's economic motivation to monitor those companies (e.g., Fich, Harford, and Tran, 2015).

Second, we construct a firm-level measure to capture the presence of *litigation-prone* large shareholders as follows. For each firm *i* not subject to any securities class-action lawsuit during year *t*, we define the *litigation-prone large shareholder (LPLS)* linkage measure as the fraction of holdings among its top five largest institutional investors that are held by litigation-prone investors. Specifically, for firm *i* at quarter *s*, *LPLS linkage* is defined as:

$$Litigation\text{-}prone\ Large\ Shareholder\ Linkage_{i,s} = \frac{\sum_{j \in Litigation-prone\ Investors\ among\ Top\ 5} H_{i,j,s}}{\sum_{j \in Top\ 5\ Investors} H_{i,j,s}},$$

where $H_{i,j,s}$ is the holdings of stock *i* by investor *j*. Since this measure is calculated each quarter, we use the yearly average across the four quarters as our main measure in later analyses.

2.2 Discussion

Since the LPLS linkage measure is new, we discuss the economic context as well as the strengths and weaknesses of this measure. The LPLS linkage measure is the percentage of litigation-prone investors among the set of institutional investors that arguably have the strongest incentives to govern because of their large ownership stakes (i.e., top five in our baseline scenario). The purpose of using the percentage is to capture the heterogeneity of governing ability and style within the set of influential investors. The measure is bounded by 0% (i.e., no litigation-prone investors among the top five) and 100% (i.e., all litigation-prone investors among the top five). For the latter case, the firm is dominated by litigation-prone investors and likely to suffer from a lack of effective shareholder monitoring. When the measure lies between the extremes, it captures the idea that a firm may have effective monitors that counter-balance the weaknesses of litigation-prone investors.

An alternative approach is to measure the ownership of litigation-prone large shareholders relative to the amount of firms' common shares outstanding. This economically captures the direct ownership by litigation-prone investors. The drawback is that it does not capture the potential presence of effective monitors that may counter-balance the weaknesses of litigation-prone investors. In the Online Appendix, we re-estimate the main specifications using the ownership-based measure. All of our key findings are robust using this alternative measure.

The top five cutoff for institutional investors is somewhat arbitrary, but it conservatively captures the most relevant set of institutional investors and aligns with the methodology in prior literature (i.e. Hartzell and Starks, 2003; Chen, Harford, and Li, 2007). We ensure that our results are not sensitive to this choice by creating linkage measures using 1) the top ten largest institutional shareholders, 2) institutional blockholders defined as ownership > 1%, and 3) institutional blockholders defined as ownership > 5%.[8]

One drawback of our approach is that it does not explicitly capture differences in mandates and preferences among institutional investors. Specifically, we assume that the top five largest institutional shareholders are likely to be influential. Some large shareholders hold mandates or have incentives that deter intervention. We address this issue in Section 3.1.5.[9]

2.3 Summary statistics: Main sample

Table I summarizes the securities class-action (SCA) lawsuits in our sample. Panel A shows the number of lawsuits each year and separately by settled and dismissed lawsuits. In total, our sample includes 3,421 class-action lawsuits, among which 55% of lawsuits are settled, while 37% were dismissed, with the remaining 8% ongoing cases that have yet to be settled or dismissed. Unreported

[8] To ensure that industry or geographical linkages are not behind our results, we calculate alternatives measures of litigation-prone shareholder linkage by excluding litigation stocks in the same industry or located in the same region.

[9] We separately calculate LPLS linkage measures among independent institutions (i.e., investment companies, independent investment advisors, and public pension funds) and among "grey" institutions (i.e., bank trusts, insurance companies, corporate pension funds, and other institutions).

results show that the mean (median) market value of litigation stocks is $5702 ($376) million, much larger than the mean (median) market value of $2222 ($200) million among U.S. public firms.

Panel B reports the cumulative abnormal returns (CARs) around filing dates of the SCA lawsuits. We estimate the abnormal return using the market model with an estimation period of (–300, –46) before the filing date. The CARs are highly negative and statistically significant across various windows around the filing dates. In the immediate three-day window, the average CAR is -4.1% with a t-statistic of -16.58. The CARs are larger in magnitude over the pre-filing date period both starting at day t=-10 (-11.5%, t=-24.20) and day t=-30 (-18.0%, t=-26.39). The next two columns show the announcement returns for settled and dismissed cases. Settled cases tend to have more negative CARs across the three estimated windows. It is noteworthy that even for dismissed cases, the market reaction is a substantial -13.4% (t=-13.62) over the (-30, +1) window, and -2.6% (t=-7.97) over the (-1,+1) window.

Table II reports the summary statistics of the main variables. By construction, the sample firms do not have an SCA lawsuit during the year in which we calculate the LPLS linkage. The complete sample includes 79521 firm-year observations. Litigation occurs 2.6% of the time in our firm-year sample, comparable to previous studies. The LPLS linkage measure has a mean (median) of 37% (34%), with a standard deviation of 26%. For the top 10 version of our large shareholder linkage measure, the *LPLS linkage* measure has a mean (median) of 42% (41%), with a standard deviation of 25%. On average, the total institutional ownership of sample firms is 40%, and the large institutional ownership from the top five and top 10 institutional investors is 19% and 26%, respectively.

3. Are litigation prone large shareholders ineffective monitors?

This section presents the main findings on whether litigation prone large shareholders are ineffective monitors. We begin by analyzing the effect of litigation-prone large shareholder on a firm's future litigation risk (i.e., ex-ante litigation risk). Then, we examine whether short-sellers also pick up on these internal governance issues. Finally, we consider additional governance outcomes.

3.1 Using LPLS linkages to predict future litigation risk: Extensive margin

We test whether the litigation-prone large shareholder *(LPLS)* linkage measure increases the chance of future litigation by estimating a probit model following equation (1):

$$Litigation\ Dummy_{,t+1} = \alpha + \beta \times LPLS\ linkage_{i,t} + \delta X_{i,t} + \varepsilon_{i,t+1} \quad (1)$$

where *Litigation Dummy* is equal to one if the firm is being sued in year t+1. $LPLS\ linkage_{i,t}$ is defined as the fraction of holdings by litigation-prone investors among the firm's top five largest institutional investors, and $X_{i,t}$ is a vector representing firm control variables. All independent variables are estimated in year t. Standard errors are clustered at the firm level in all specifications.

Panel A of Table III shows a statistically positive relationship between the LPLS linkage measure and litigation risk. Column (1) shows that the LPLS linkage variable alone significantly predicts the probability of a SCA lawsuit in the following year. The conditional marginal effect implies that the probability of future litigation increases by 41% relative to the sample average probability per a one standard deviation increase in the LPLS linkage variable. Column (2) shows similar results with the inclusion of year fixed effects to capture time-varying macroeconomic trends, which may affect litigation risk (Wang, Winton, and Yu, 2010), and institutional ownership, which Barabanov et al. (2008) use to predict litigation risk. Specifically, we include the level of large institutional ownership (i.e., top five institutional investors), other non-top five institutional ownership, and insider ownership measures at year t. Also, we include the change in these variables from t-1 to t. To proxy the investment horizon of institutional shareholders (Bushee, 1998), we introduce an institutional turnover variable defined as the weighted average portfolio churn rate of institutional investors.

The results are similar with the inclusion of these variables. The coefficient estimate on the LPLS linkage measure remains positive and statistically significant and the conditional marginal effect remains economically large at 38%. The level of non-top5 institutional ownership and institutional turnover both significantly predict future litigation, consistent with Barabanov et al. (2008). The evidence is also consistent with the findings in Bushee (1998) that short-term horizon institutional investors may influence managers to engage in myopic, value-destroying activities.

Column (3) shows similar results after controlling for major firm characteristics that influence the probability of SCA litigation. The conditional marginal effect remains economically large at 26%. We include an *FPS dummy*, which is a dummy variable equal to one if the firm is in a high litigation risk industry and zero otherwise (e.g., Francis, Philbrick, and Schipper, 1994a, 1994b; Kim and Skinner, 2012).[10] We include *firm size*, *book leverage* ratio, the *market-to-book* ratio, *profitability*, *sales growth*, *R&D*, *goodwill*, *equity proceeds,* and *debt proceeds*. Consistent with prior literature (Kim and Skinner, 2012), the probability of future litigations is positively related to the FPS dummy, firm size, the market-to-book ratio, sales growth, and recent equity and debt issuance activities.

The LPLS linkage measure may capture omitted dimensions of firm risk and potential shareholder damages. Column (4) alleviates this concern, as the coefficient estimate on LPLS linkage remains significantly positive after controlling for *past annual stock return*, *return volatility*, *return skewness*, and *stock illiquidity* (Amihud, 2002). These variables capture the size of potential shareholder damages following Dechow et al. (2011) and Kim and Skinner (2012). The economic effect of large shareholder linkage remains large, as a one standard deviation change increases the probability of future litigation by 22% relative to the sample average probability.

The results indicate that the LPLS linkage measure predicts future securities class-action lawsuits beyond previously identified firm-level factors and stock market characteristics. While we control for an array of firm characteristics and market characteristics commonly used in the literature (Kim and Skinner, 2012), these tests may not fully rule out the possibility of unobserved firm heterogeneity. Therefore, we perform the same set of test specifications using a conditional logit model with firm fixed effects. The evidence suggests that unobserved firm heterogeneity is unlikely to explain our findings as the LPLS linkage measure remains a statistically significant predictor of future litigation at better than the 1% level across all specifications. The results are available in the Online Appendix.

3.1.1. Do frivolous lawsuits explain our findings?

[10] High lawsuit industries include biotechnology, computers, electronics, and retail industries (Francis, Philbrick, Schipper, 1994a, 1994b; Kim and Skinner, 2012).

An important concern is that some SCA lawsuits are frivolous and driven by law firms for attorney fees (Coffee, 1985, 1986; Romano, 1991). Since frivolous lawsuits are unlikely to reflect underlying internal governance problems, they may potentially increase the noise in our estimates and bias our findings. We mitigate this concern by starting the sample after the passage of the Private Securities Litigation Reform Act of 1995, which significantly lowered the incidence of frivolous lawsuits (Ferris and Pritchard, 2001). Moreover, the large negative stock returns around filing dates in our sample suggest that, on average, SCA lawsuits are likely to have a material basis.

We sharpen our analysis by focusing on SCA lawsuits with more severe allegations. We classify the severity of lawsuits based on two separate criteria. First, we separate lawsuits based on whether they are eventually settled or dismissed. On average, settled lawsuits should reflect more serious cases of misconduct. Dismissed lawsuits are those that the judge deemed to lack sufficient evidence. Our second classification for serious allegations is based on the initial 3-day market reactions around litigation filing dates.[11] More negative market reactions indicate more serious allegations as the market expects greater potential damages.

Using these criteria, we identify two groups of litigation-prone large shareholders, one from the more severe cases and another from the less severe cases, and construct two separate linkage measures following our previous procedure. We estimate the same regressions as in Table IV, but suppress control variables to conserve space. To facilitate the comparison between coefficients, we standardize both linkage measures to have a mean of zero and a standard deviation of one, by subtracting the mean and dividing by the standard deviation, respectively.

The evidence suggests that the effect of LPLS linkages on future litigation is much stronger for more severe allegations. Panel B-1 of Table III presents the analysis based on settled cases and dismissed cases. The effect of LPLS linkages on future litigation is nearly twice as large for settled compared to

[11] Specifically, we identify the severity of cases by the cumulative abnormal returns during the 3-day window (-1, +1) around the litigation filing date. We define cases with high/low announcement return by the sample median CAR. We calculate the litigation-prone large shareholder linkage measures only based on the high CAR (-1,+1) cases and only based on the low CAR (-1,+1) cases.

dismissed cases. Column (1) shows that the coefficient estimate is 0.126 versus 0.078. The coefficient estimates are significantly different across all four specifications.[12] The patterns are also similar when comparing linkage measures based on initial market reactions. Panel B-2 of Table III shows that the effect of shareholder linkages is more than two times larger for the measure derived from cases with more negative announcement returns than for its less negative announcement return counterpart. For example, column (1) shows that the coefficient estimate is 0.138 versus 0.065. The difference in coefficients is statistically significant across all four specifications.

This evidence suggests that frivolous lawsuits are unlikely to explain our findings. As expected, the effects are stronger based on the linkage measure derived from lawsuits with more severe allegations. Overall, the results support our empirical approach for using SCA litigations to identify the monitoring abilities of large institutional shareholders.

3.1.2. Litigation risk: Intensive margin

Beyond increasing the probability of SCA lawsuits (extensive margin), we also expect increases in the intensive margin to the extent that governance issues are more severe at companies with a large fraction of litigation-prone investors. If the presence of litigation prone large shareholders represents a lack of effective internal monitoring, then the SCA lawsuit charges are likely to be more material and the market should react more negatively to such litigation announcements. We test this prediction by examining the relation between the *LPLS linkage* measure and market reactions around litigation filing dates using specification (2):

$$Litigation\ CAR_{i,t+1} = \alpha + \beta \times LPLS\ linkage_{i,t} + \delta X_{i,t} + \varepsilon_{i,t+1} \quad (2)$$

Litigation CAR is the three-day cumulative abnormal return around the SCA filing date in year t+1. We use the market model to estimate the abnormal returns with window (-300, -46) before the announcement date as the estimation period. *LPLS linkage* is the main measure used throughout the paper.

[12] It is interesting to note that the linkage measure based on dismissed cases is also statistically significant. This suggests that dismissed cases still reveal signals of internal governance failure due to a lack of effective large shareholder monitoring.

$X_{i,t}$ is a vector representing firm control variables, estimated in year *t*. All specifications cluster standard errors at the industry level and include year fixed effects to capture macro-economic trends.

The results in Table IV show that the LPLS linkage measure strongly predicts more negative announcement returns around litigation filing dates. The parameter estimate on LPLS linkage is statistically negative the baseline specification with ownership controls in Column (1). The results are similar after including control for firm characteristics in Column (2) and stock characteristics in Column (3). The inferences are unchanged with the inclusion of industry fixed effects to capture industry heterogeneity in Column (4).

3.1.3. Omitted economic linkages

We recognize that omitted characteristics may explain our findings. Connecting firms based on common large shareholders may inadvertently encapsulate underlying economic linkages that affect litigation risk. For example, the effects of industry spillover raise litigation risk (Gande and Lewis, 2009). Connecting firms based on ownership may inadvertently capture known determinants of governance choice including board interlocks (e.g., Bizjak, Lemmon, and Whitby, 2009) and geographic location (e.g., Kang and Kim, 2008). The linkage measure may also capture shocks along the supply chain. To address this issue, we reconstruct the LPLS linkage measure only using firms subject to litigation after excluding firms 1) from the same industry (different one-digit SIC code), 2) that have interlocking boards (one or more common directors), 3) from the same geographic region, or 4) that share customer-supplier relationships. We also omit hedge funds from the construction of the variable. We estimate the same regression specifications as in Table III, but suppress control variables to conserve space.

The results in Panel A of Table V suggest that these economic linkages are unlikely to explain the main findings. Test 1 shows that the parameter estimate on the reconstructed LPLS linkage measures does not materially change after excluding industry linkages compared with Table III. In Test 2, we exclude the interlocking board channel using firm director data from the IRRC Risk Metrics database from 1996 to 2010. Again, the results are not sensitive to exclusion of firm linkage by interlocking boards. Test 3

reconstructs the LPLS linkage measure using litigation-prone large investors that are located in different regions. We define the locations of firms using broad geographic regions (e.g. 10 U.S. regions) to be conservative.[13] Using the region-excluded measure, the conditional marginal effects range from 43% to 22% which is comparable to the effects using the main measure. In Test 4, we exclude firms whose suppliers or customers have been subject to SCA litigations in the previous three years. We identify the supply chain relationship using the Compustat Customer Segments data. The results are not sensitive to exclusion of customer-supplier links.

An alternative interpretation of our findings is that litigation-prone investors select stocks with unobservable characteristics with aim of earning higher returns or improving operating performance. For example, these institutions may be activists or hedge funds. To partially address this concern, we omit hedge funds from the construction of the linkage measure. Test 5 shows that the results are similar after omitting hedge funds. We provide a more complete discussion of the selection issue in Section 4.2

3.1.4. Institutional plaintiffs and IPO-related litigation

An advantage of our identification approach is that securities class-action litigation is commonly initiated by small individual investors. However, some class-action lawsuits may be initiated by institutional investors themselves. Cheng et al. (2010) show that institutional investors serve as lead plaintiffs among around 15% of class-action litigation cases. It is possible that our results are driven by large institutional investors often resorting to class-action lawsuits as a managerial disciplining tool. We argue that this explanation is unlikely because institutional investor led class-action lawsuits represent only a small fraction of lawsuits in our sample – amounting to just over 18%.

[13] The region definitions are: New England (Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, Connecticut), Middle Atlantic (New York, Pennsylvania, New Jersey), East North Central (Wisconsin, Michigan, Illinois, Indiana, Ohio), West North Central (Missouri, North Dakota, South Dakota, Nebraska, Kansas, Minnesota, Iowa), South Atlantic (Delaware, Maryland, Washington D.C., Virginia, West Virginia, North Carolina, South Carolina, Georgia, Florida), East South Central (Kentucky, Tennessee, Mississippi, Alabama), West South Central (Oklahoma, Texas, Arkansas, Louisiana), Rocky Mountain (Montana, Wyoming, Nevada, Utah, Colorado, Arizona, New Mexico), Northwest (Oregon, Washington, Idaho) and California.

We implement two tests to confirm that institutional investor led litigation is not driving our results. Our second test excludes all securities class-action lawsuits with institutional investors serving as lead plaintiffs both during the construction of the LPLS linkage measure and from the dependent variable.[14] Our first test excludes corporate and public pension funds from the construction of the LPLS linkage measure because Cheng et al. (2010) show that corporate retirement and pension funds are the type of institutional investors that most frequently serve as lead plaintiffs in securities class-action lawsuits. Panel B of Table V shows that our results are not sensitive to these exclusions. While SCA lawsuits serve as a form of governance recourse for some institutional investors, this is not the channel behind our findings.

Next, we address the possibility that IPO-related lawsuits cloud our inferences. These lawsuits typically charge that IPO valuations were set too high, perhaps due to inflated project growth and earnings. Wang, Winton, and Yu (2010) find that the probability of fraud increases when firms with IPO underwriters have higher monitoring costs. These types of lawsuits are not well suited for our setting because the allegations of misconduct occur while the company is still private and without the presence of institutional shareholders. In Panel B of Table V, we exclude the class action lawsuits with IPO-related allegations[15] both in the procedure to construct the LPLS linkage, and from the dependent variable. The evidence shows that our results are not sensitive to this exclusion, suggesting that IPO-related lawsuits are not behind our findings.

3.1.5. Alternative definitions of large institutional shareholders

We recognize that the construction of the LPLS linkage measure requires certain ad-hoc empirical choices. This section presents evidence to ensure that our findings are not sensitive to these choices. The main tests use the top five largest institutional investors as large shareholders, because these shareholders should have sufficient incentives to engage in active monitoring. Although this definition is commonly used in the prior literature (e.g., Chen, Harford, and Li, 2007), it is regardless an arbitrary cutoff to define

[14] We identify institutional lead plaintiffs by manually searching the names of lead plaintiffs with the keywords: "pension", "management", "fund", "administration", "retirement", "advisor" and "trust".

[15] This type of litigation identified as "IPO Allocation" in the SCA database.

large shareholders. An ideal cutoff may be stricter or looser than using the top five shareholders. We address this concern by re-estimating the previous tests using the following alternative constructions: 1) top 10 institutional shareholders; 2) institutional block holders defined as ownership > 1%; 3) institutional blockholders defined as ownership > 5%. Panel C of Table V shows that our results remain robust across all of these different specifications. These results suggest that our main results are not sensitive to methodological choices when we define the LPLS linkage measure.

3.2 Do short sellers target stocks with high LPLS linkages?

The evidence in the previous section shows that litigation-prone shareholder linkages predict unfavorable future corporate outcomes. In this section, we examine whether sophisticated market participants take cues from shareholder linkages and trade on this information. This provides an external signal that is not directly related to firm or ownership characteristics but is related to potential underlying governance issues. Gande and Lewis (2009) show that lawsuits generate negative market reactions to peer firms, suggesting that the market anticipates future litigation risk. Karpoff and Lou (2010) find that short sellers anticipate serious financial misrepresentation that triggers SEC investigations. Motivated by these studies, we hypothesize that short sellers may use the signals embedded in litigation-prone large shareholder linkages to trade against these firms.

We test this prediction using a two-stage approach. To identify that short sellers are identifying the information embedded in litigation-prone large shareholder linkage, we first estimate a first stage probit regression to predict the litigation likelihood explained by the litigation-prone large shareholder linkage measure using equation (3).

$$Litigation\ Dummy_{i,t+1} = \alpha + \beta \times LPLS\ linkage_{i,t} + \varepsilon_{i,t+1} \quad (3)$$

The predicted value from this regression isolates this channel and captures the variation in litigation due to the litigation-prone shareholder linkage measure. Using the predicted values from equation (3), we estimate a panel regression using the following equation (4):

$$Short\ interest_{i,t+1} = \alpha + \beta \times Predicted\ Litigation\ Likelihood_{i,t+1} + \delta X_{i,t-} + \varepsilon_{i,t+1}. \quad (4)$$

Short interest is the total amount of short interest in the following year. $X_{i,t}$ is a vector representing firm control variables, estimated in year *t*. The baseline specifications include year fixed effects, and we include additional industry fixed effects in the third and fourth specifications. Standard errors are clustered at the firm level.

The evidence suggests that short sellers take cues from common shareholder linkages. Table VI reports the results. Column (1) shows a significantly higher level of short interest in the following year when predicted litigation likelihood is high. The coefficient estimate on *Predicted Litigation Likelihood* is positive and statistically significant at the 1% level. Column (2) and (3) shows that the results are similar with the inclusion of firm characteristics and firm risk measures. Column (4) shows that the measure continues to predict short interest after including firm fixed effects. The evidence suggests that short sellers take cues from common shareholder linkages. Our interpretation is that this provides an additional external signal that underlying governance issues exist at firms with high litigation-prone investors. [16]

3.3 Do LPLS linkages predict other poor governance outcomes?

Ineffective large shareholder monitoring should be related to other unfavorable governance outcomes. In this section, we examine bidder announcement returns in mergers and forced CEO turnover and performance sensitivity.

3.3.1. Bidder announcement returns

Merger and acquisitions are a corporate governance outcome frequently examined in the extant literature (e.g., Gaspar, Massa, and Matos, 2005; Chen, Harford, and Li, 2007). These corporate actions potentially reflect conflicts between shareholders' and manager's interest. To prevent empire-building,

[16] As short sellers may take short positions on the announcement of lawsuits, we also estimate the regression using short interest in the current year. In unreported tests, we find that the *litigation-prone large shareholder linkage* measure also strongly predict higher current year short interest.

governance mechanisms are designed to stop managers from making acquisitions that are value-destroying for shareholders. However, poor acquisitions may occur when these mechanisms fail. If *litigation-prone* investors represent ineffective monitors, we expect that firms with a high representation of *litigation-prone* large shareholders will tend to have worse M&A outcomes.

We assess the quality of an acquisition deal using the bidder announcement return measured as the 3-day cumulative abnormal returns using an estimation window from t=-300 to t-46. To ensure that the deals are material to the bidder, we require that the deal value exceeds 50 million dollars. We estimate a cross-sectional regression of bidder announcement returns on the LPLS linkage measure using the following equation (5):

$$Bidder\ CAR_{i,t+1} = \alpha + \beta \times LPLS\ linkage_{i,t} + \delta X_{i,t} + \varepsilon_{i,t+1} \quad (5)$$

Bidder CAR is the three-day cumulative abnormal return around acquisition announcement at t+1. The dependent variable is the LPLS linkage measure used throughout the paper. $X_{i,t}$ is a vector representing firm control variables, estimated in year t. The regressions include merger characteristics such as deal value, tender offer dummy, cash offer dummy, and same industry dummy following standard convention in the literature. All specifications cluster standard errors at the industry level and include year fixed effects to capture macro-economic trends and industry fixed effects to capture heterogeneity in industry.

Panel A of Table VII shows that the LPLS linkage measure strongly predicts negative bidder merger announcements. Column (1) includes only deal characteristics and shows that the coefficient estimate on LPLS linkage measure is negative and statistically significant at the 1% level. The coefficient estimate on LPLS linkage measure is similar after controlling for shareholder ownership in Column (2). Merger announcements are positively related to changes in institutional ownership (both large and other), while negatively related to insider ownership. The results are also similar with the inclusions of firm characteristics in Column (3) and firm risk measures in Column (4).

Overall, the results suggest that the LPLS linkage measure is associated with poor acquisition decisions. This is consistent with our earlier evidence that the presence of litigation-prone investors captures ineffective monitoring.

3.3.2. CEO turnover performance sensitivity

Another commonly studied governance outcome is CEO turnover-performance sensitivity. Firms with better governance mechanisms tend to dismiss CEOs after poor performance (e.g., Kang and Shivdasani, 1995; Fich and Shivdasani, 2006; Kaplan and Minton, 2012). However, when these mechanisms fail, poorly performing CEOs may be able to keep their jobs. To examine the effect of litigation-prone large shareholders on the probability of forced CEO turnover, we estimate the probit model in equation (4):

$$Forced\ CEO\ Turnover_{i,t+1} = \alpha + \beta \times Stock\ Return_{i,t} \times High\ Linkage\ Dummy_{i,t} + \delta X_{i,t} + \varepsilon_{i,t+1} \quad (6)$$

Forced CEO Turnover is an indicator equal to one if the firm experiences a forced CEO turnover in year t+1. The variable of interest is the interaction term between *stock return* and *high linkage dummy*. In each year, we first obtain the residuals from a regression of the LPLS linkage measure on the complete set of control variables in column (4). Then, we define the *high linkage dummy* to be one if the regression residual is above the sample median and zero otherwise. $X_{i,t}$ is a vector representing firm variables and CEO characteristics [17] (*tenure, age, chairman, founder, and ownership*), estimated in year t. All specifications cluster standard errors at the firm level and include year fixed effects to capture time-varying macroeconomic trends.

Panel B of Table VII shows that CEOs of firms with high *LPLS linkage* are less likely to be dismissed after poor stock performance. The coefficient estimate on the interaction term is negative and statistically significant in Column (1). The results are similar after controlling for shareholder ownership

[17] Details of the variable construction are available in the Table VIII description.

in Column (2), firm characteristics in Column (3), and firm risk in Column (4). This evidence is consistent with the view that litigation-prone investors are ineffective monitors.

4. Understanding the monitor incentives of litigation prone investors

If these large investors are ineffective monitors, what are the economic forces acting on these institutions? In this section, we provide further analysis on the characteristics of litigation prone large shareholders. Then we provide some anecdotal and performance-based evidence on this issue. We also provide a discussion on the issue of selection versus treatment in interpreting our findings.

4.1 Litigation-prone large shareholders

Table VIII presents statistics for the large shareholders and the litigation-prone large shareholder in our sample.[18] Panel A shows that large institutional investors have a mean (median) portfolio holdings of $6525 ($301) million. Litigation stocks comprise 2.46% of their portfolios. Large shareholders that hold at least 1 stock subject to class-action lawsuit tend to be larger with a mean (median) portfolio size of $15,888 ($1258) million. Relative to other large shareholders, the litigation-prone investors have larger portfolio holdings ($21,314 million) on average, but the median portfolio size tends to be smaller ($993 million). By construction, the litigation-prone large shareholders have a much larger fraction of litigation stocks in their portfolios (11.67% vs. 1.41%).

To develop a better understanding of litigation-prone investors, we manually research the top 50 litigation-prone investors in our sample. At least eight of the investors are private equity funds or advertised value strategies. Such investors may systematically select stocks with potentially higher litigation risk to earn higher returns. Therefore, we examine portfolio performance shortly. We are also careful to sufficiently control for firm and industry characteristics identified in the existing literature to the extent possible. Section 3.2 provides additional analysis using heterogeneity in investor types and discusses the role of selection in our findings. Perhaps most surprising is that 19 of the top 50 investors

[18] For each firm, we identify large shareholders as the top five institutional investors ranked by the amount of holdings of the company's common stock.

experienced SEC or DOJ investigations for violations of security law including compliance failure, false filings, fraud, insider trading, and criminal bribery.

While the evidence is anecdotal, it suggests that litigation-prone investors may have serious operational risk issues that deter both monitoring and return performance. Recent studies find that operational risk related to breakdowns of internal controls and processes leads to subsequent poor performance (e.g., Brown, Goetzmann, Liang, Schwarz, 2008, 2012; Chenobai, Jorion, Yu, 2011; Dimmock and Gerken, 2012). Therefore, if the operational risk is a potential mechanism behind the failure of litigation-prone investor monitoring, we also expect to find relatively poor portfolio performance.

Panel B of Table VIII compares the buy-and-hold portfolio returns between litigation-prone and non-litigation-prone large shareholders. For each investor-quarter, we calculate the raw portfolio return as the weighted average return of the investor's portfolio using the previous-quarter end holdings value as the weight. We calculate DGTW-adjusted portfolio returns[19] and perform t-tests and Wilcoxon tests to compare the differences in the mean and median values.

The results show that litigation-prone large shareholders underperform other large shareholders. On average, litigation-prone large shareholders underperform by 61 basis points per quarter in raw returns or 16 basis points per quarter in DGTW-adjusted returns. These differences are statistically significant. These results do not support the explanation that litigation-prone large shareholders may have a tendency to invest in risky stocks with potentially poor governance outcomes in order to achieve better returns in their overall portfolio. Rather, it is consistent with the view that litigation-prone investors are likely to be ineffective monitors and underperform their peers due to a lack of ability or underlying operational risk issues.

[19] Follow the methodology of Daniel, Grinblatt, Titman, and Wermers (1997), in every quarter t, and for each institutional investor j, we calculate the adjusted portfolio return as $\mathrm{DGTW}_{j,t} = \sum_{i=1}^{N} \omega_{i,t-1} (\mathrm{Ret}_{i,t} - \mathrm{Benchmark}_{i,t})$, where $\omega_{i,t-1}$ is the portfolio weight on stock i at the end of quarter t-1, $\mathrm{Ret}_{i,t}$ is the quarter t return of stock i, and $\mathrm{Benchmark}_{i,t}$ is the quarter t return of the characteristic-based benchmark portfolio that is matched to stock i along the dimensions of size (market value of equity), book-to-market ratio, and momentum.

In Panel C, Table VIII, we distinguish litigation-prone large shareholders by investor type and report the statistics accordingly. We classify institutional investors into: bank trust, insurance company, independent investment advisor, corporate pension fund, public pension fund, university and foundation endowments, and the rest (miscellaneous).[20] University endowments and pension funds, both public and corporate, are less likely to be classified as litigation-prone large shareholders. University and pension funds tend to be more conservative and are likely to have less operational risk issues, consistent with our earlier anecdotal evidence. On the other end, investment companies and independent investment advisors are more likely to be classified as litigation-prone large shareholders.

4.2 Discussion on the interpretation of treatment versus selection

An alternative interpretation of our findings is that litigation-prone investors strategically select stocks with high litigation risk characteristics. In this section, we provide a discussion on this issue.

It is possible that litigation-prone investors are informed investors (i.e., hedge funds) who may select such stocks in hopes of earning high short-term returns. Since our tests control for the determinants of litigation risk identified in the academic literature, these investors would likely be selecting on characteristics orthogonal to those we control for. To directly control for the hedge fund channel, we drop hedge funds from our sample (in Section 3.3) and find similar results. This also addresses the potential explanation that litigation-prone investors are hedge funds that target companies with governance problems in order to 'fix' them and generate higher returns (e.g., Brav, Jiang, Partnoy, and Thomas, 2008). Moreover, in the previous section, we find that the portfolio returns of litigation-prone investors actually tend to slightly underperform. While it is possible that these investors are hoping to earn high returns on these litigation-risk stocks, the performance does not appear to bear out in their portfolio returns.

We examine whether our results are driven by short-term investors using two approaches. First, we require that LPLS linkage measure only includes investors that held the stock for at least two years (t-1

[20] We use the investor type classification obtained from Brian Bushee's website, available at http://acct.wharton.upenn.edu/faculty/bushee/IIclass.html.

and t). The results are similar with this specification and reported in the Online Appendix. This suggests that the omitted characteristic that these investors select on would be a longer-term firm attribute. Next, we re-construct the LPLS linkage measure using long-term horizon shareholders. Panel A in Table IX shows that the association between future litigation risk and the LPLS linkage measure is significantly stronger among long-horizon investors compared against short-horizon investors. This suggests that our findings are not likely due to short-term stock selection.

A subtle assumption is that large shareholders should actively monitor their portfolio companies. However, some shareholders have weaker economic incentives to intervene. These include "grey" institutions which have other business interests (e.g., Brickley, Lease, and Smith, 1988; Almazan, Hartzell, and Starks, 2005) and shareholders with relatively smaller positions (e.g., Grossman and Hart, 1980; Fich, Harford, and Tran, 2015). Therefore, we construct the LPLS linkage measure using grey investors compared to independent advisors. The differences in coefficient estimates on the *LPLS* linkage variable is significant across all specifications. For example, the coefficient estimate for independent investors in Column (1) is three times larger than that of grey investors (0.160 vs. 0.052). The conditional marginal effect (unreported) is 37% for independent investors versus 12% for grey investors. Similar patterns arise across all specifications, suggesting that firm characteristics are not behind these differences. The coefficient estimate for grey investors is insignificant in Column (4), while the coefficient estimate for independent investors remains positively significant at the 1% level.

To compare investors with small versus large positions, we separate the top ten largest institutional shareholders into the top five and bottom five (i.e., top ten, but not top five shareholders)[21] based on ownership. Then, we re-construct the *LPLS* linkage measure within each group. The results in Panel B show almost no relation between litigation risk and the *LPLS* linkage measure constructed from small shareholders. Column (1) shows that the coefficient estimate is actually negative and becomes insignificant after including additional controls in Columns (2) through (4). Conversely, the *LPLS* linkage

[21] The results are similar when we use the entire group of non-top 5 institutional investors to identify small shareholder linkages. We choose the top 10 but non-top 5 shareholders to sharpen the empirical tests.

constructed using large shareholders with relative large positions strongly predicts future litigation events across all specifications.

The investor type analysis also sheds light on the potential role of selection. Studies show that informed institutions are typically "grey" investors (Massa and Rehman, 2008) and investors with shorter holding horizons (Yan and Zhang, 2009). Therefore, a selection explanation would tend to predict stronger effects among grey and short-term investors. However, this is inconsistent with the results of the prior analysis. Overall, the results in this section suggest that governance issues may be brewing behind the scenes of firms with a high fraction of litigation-prone large shareholders who should have incentives to monitor but appear to be ineffective.

5. Conclusion

Traditionally, it has been difficult to assess the quality of shareholder monitoring as intervention often occur "behind-the-scenes" (e.g., McCahery, Sautner, and Starks, 2016). Using securities class-action (SCA) lawsuits as a signal of potential internal governance failures, we identify a group of large shareholders that are likely to be ineffective in their role as monitors of corporate managers. SCA lawsuits provide an ideal setting for identifying failures in internal governance because they represent allegations of corporate wrongdoing by small shareholders. We identify a group of litigation-prone large shareholders based on the prevalence of occurrences of securities class-action lawsuits in the investors' portfolio. To analyze future governance outcomes, we create a firm-level litigation-prone large shareholder linkage measure based on the representation of litigation-prone investors in a firm.

Our findings indicate that the representation of litigation-prone investors strongly predicts future litigation events. Conversely, this implies an important role of large shareholder monitoring in mitigating litigation risk – evidence that is puzzlingly absent in the extant literature (e.g., Daines, Gow, and Larcker, 2010; Kim and Skinner, 2012). Our litigation-prone linkage measure also predicts other unfavorable corporate governance outcomes such as poorer acquisitions and lower CEO turnover-performance

sensitivity. The combined evidence across various governance outcomes is consistent with the view that *litigation-prone* investors are ineffective monitors of corporate management.

Our setting provides a novel approach to identify a group of ineffective large shareholder monitors. It would be of great interest to learn more about why this group of large shareholders cannot effectively monitor the companies in their portfolio. We provide anecdotal evidence that these investors may be suffering from operational issues and may have limited resources to devote to monitoring. Our descriptive evidence is suggestive of this possibility as institutional investors with better governance structures such as pension funds or university endowments rarely appear on the list of litigation prone investors. This adds to recent findings that link poor governance outcomes to high monitoring costs, lack of effort, or limited attention. We leave further exploration of these underlying mechanism to future research.

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Appendix: Variable Definitions

Litigation Dummy: a dummy variable that takes a value of 1 if the firm is subject to securities class action litigation in a year and zero otherwise. We obtain the data on all litigation filings in the U.S. from the Stanford Law School securities class action clearinghouse during the period of 1996 to 2013.

Litigation-prone Large Shareholder Linkage (main measure: top five): For each firm, we identify large shareholders as the top five institutional investors ranked by the amount of holdings of the company's common stock. The data on quarterly institutional holdings are from Thomason CDA/Spectrum 13F database. To study large shareholder linkage effects, we require a minimum of 10 stocks in each investor's portfolio. First, we identify a group of "prone-to-litigation" institutional investors. For each year t, we split the universe of Compustat firms into two subsamples by whether firms are subject to any securities class action litigations during the year. We select the complete set of large institutional investors from all of the firms that are being sued. Then, among this set of investors, we define an investor as the "prone-to-litigation" investor if the fraction of holdings of litigation stocks in its portfolio is above the sample median fraction. Second, for each firm *i* without subject to any securities class action lawsuit during year *t*, we calculate the fraction of institutional holdings that are held by the litigation-prone investors among the top five largest investors by stock holdings of firm i, as the measure of *litigation-prone large shareholder linkage*. Specifically, for firm i at quarter s, it is defined as:

$$\textit{Litigation prone Large Shareholder Linkage}_{i,s} = \frac{\sum_{j \in \text{ Litigation-prone Investors among Top 5}} H_{i,j,s}}{\sum_{j \in \text{ Top 5 Investors}} H_{i,j,s}},$$

where $H_{i,j,s}$ is the institutional holdings of stock *i* by investor *j*. We use the yearly average litigation-prone large shareholder linkage (across four quarters) in later analyses.

Litigation-prone Large Shareholder Linkage: *(top10, block01, block05):* We follow the same procedure as above to calculate the measure of litigation-prone large shareholder linkage, but focus on the top 10 (block01, block05) institutional investors ranked by the amount of holdings of the company's common stock, defined respectively. An investor is considered to be a block01 (block05) shareholder if its ownership is above 1% (5%) of the firm's share outstanding.

Institutional Ownership (total): the number of shares held by all of the institutional investors divided by the number of shares outstanding.

Large Institutional Ownership (top5, top10, block01, block05): the number of shares held by large institutional investors (top5, top10, block01, block05) divided by the total number of shares outstanding, defined respectively. An investor is considered to be a block01 (block05) shareholder if its ownership is above 1% (5%) of the firm's share outstanding.

Other Institutional Ownership (top5, top10, block01, block05): the difference between total institutional ownership and large institutional ownership (top5, top10, block01, block05*),* defined respectively.

Insider Ownership: the number of stocks held by corporate insiders divided by the total number of shares outstanding.

Change in Ownership (large institutional investor, other institutional investor, insider): the change in quarterly investor ownership (*large institutional investor, other institutional investor, insider*) in a year.

Institutional turnover: We first calculate the portfolio churn rate of institutional investors to capture how frequently an investor rotates his positions on all the stocks of the portfolio. If we denote the set of companies held by investor *i* by *Q*, the churn rate of investor *i* at quarter *s* is: $CR_{j,s} = \frac{\sum_{k \in Q} \left| N_{j,k,s} P_{k,s} - N_{j,k,s-1} P_{k,s-1} - N_{j,k,s-1} \Delta P_{k,s} \right|}{\sum_{k \in Q} \frac{N_{j,k,s-1} P_{k,s-1} + N_{j,k,s} P_{k,s}}{2}}$, where $P_{k,s}$ and $N_{j,k,s}$ represent the price and number of shares of stock k held by investor j at quarter s. Then, for each quarter t, we calculate the average churn rate over the previous 4 quarters: $\overline{CR_{j,t}} = \frac{1}{4} \sum_{r=1}^{4} CR_{j,\, t-r+1}$. Next, at the stock level, for each stock i, we calculate the holdings-weighted average institutional churn rate.

Firm Size: the logarithm of book assets (Compustat Item: AT).

Market-to-Book: market value of assets/book assets (AT), where the market value of assets is calculated as: stock price (PRCC_F) * shares outstanding (CSHO) + short term debt(DLC) + long term debt(DLTT) + preferred stock liquidation value (PSTKL) – deferred taxes and investment tax credits (TXDITC).

Book Leverage: total debt/book assets (AT), where total debt is long term debt (DLTT) + short term debt (DLC).

Profitability: operating income before depreciation (OIBDP)/book assets (AT).

Sales Growth: current year sales (SALE) less prior year sales scaled by prior year sales.

R&D: research and development expenses (XRD) scaled by book assets (AT). If the information on XRD is missing, we put it to be 0.

Goodwill: goodwill (GDWL) divided by book assets (AT).

Equity Proceeds: the amount of equity issuances (SSTK) divided by book assets (AT).

Debt Proceeds: the amount of debt issuances (DLTIS) divided by book assets (AT).

Yearly Return: the cumulative stock return in a year.

Return Volatility: the standard deviation of monthly stock returns in a year.

Return Skewness: the skewness of monthly stock returns in a year.

Amihud Illiquidity: the Amihud (2000) illiquidity measure, at annual frequency. It averages the square root of the ratio of the absolute price change divided by daily dollar volume over each day in year *t*, calculated as: $Illiquidity_{i,t} = \frac{1}{D_t} \sum_{days \in t} (1000 * \sqrt{\frac{|daily\ return|}{daily\ dollar\ volume}})$.

FPS Industry Dummy: a dummy variable equal to one if the firm is in one of the four industries (Biotech: SIC codes 2833-2838 8731-8734; Computer: SIC codes 3570-3577, 7370-7374; Electronics: SIC codes 3600-3674; Retail: SIC codes 5200-5961) and zero otherwise.

Industry Fixed Effects: industry dummy variables defined at the two-digit SIC level.

Bidder CAR (-1, +1): the 3-day cumulative abnormal returns of the bidder around the merger announcement date. We use the market model to estimate the abnormal returns with window (-300, -46) before the announcement date as the estimation period.

Forced CEO Turnover Dummy: a dummy variable equal to one if the firm has a forced CEO turnover in the year and zero otherwise. We obtain the data on forced CEO turnovers for firms in the S&P ExecuComp database between 1993 and 2010 from Jenter and Lewellen (2014).

Table I
Summary Statistics: Securities Class Action Litigations

In this table, we provide summary statistics for our sample of securities class action litigations. We obtain the data on all of the litigation filings of publicly listed firms in the U.S. from the Stanford Law School securities class action clearinghouse during the period of 1996 to 2013. Panel A reports the number of class action litigations by year. For each year, we summarize the number of filed litigations, and we distinguish litigations by their current status: settled, dismissed and ongoing (as of Oct. 2014).

In Panel B, we calculate the cumulative abnormal returns (CARs) around the filing dates of class action litigations. We use the market model to estimate the abnormal returns with window (-300, -46) before the filing date as the estimation period. We report the average CARs for three event windows: (-30, +1), (-10, +1) and (-1, +1), and we test them to be statistically different from 0. We also separately report the average CARs for the settled cases as well as the dismissed cases. ***, ** and * represent significance levels at 1%, 5%, and 10%, respectively with t-statistics given in parentheses.

Panel A: Number of Securities Class Action Litigations by Year

Year	Number of Litigations	Settled	Dismissed	Ongoing
1996	95	63	32	-
1997	168	122	46	-
1998	229	145	84	-
1999	201	118	83	-
2000	202	129	73	-
2001	480	420	60	-
2002	241	159	81	1
2003	203	112	89	2
2004	215	123	91	1
2005	167	86	80	1
2006	109	66	42	1
2007	162	88	67	7
2008	185	84	97	4
2009	123	44	66	13
2010	154	46	90	18
2011	182	47	106	29
2012	146	13	59	74
2013	159	2	14	143
Total	3,421	1,867	1,260	294

Panel B: Announcement Returns around Litigation Filing Dates

Event Window	Overall	Settled	Dismissed
CAR (-30,+1)	-18.0%***	-21.3%***	-13.4%***
	(-26.39)	(-21.16)	(-13.62)
CAR (-10,+1)	-11.5%***	-13.7%***	-8.4%***
	(-24.20)	(-19.73)	(-12.32)
CAR (-1,+1)	-4.1%***	-5.3%***	-2.6%***
	(-16.58)	(-14.10)	(-7.97)

Table II
Summary Statistics: Main Variables

This table presents summary statistics of the main variables used in the study. The data on quarterly stock holdings of institutional investors are from Thomson CDA/Spectrum (13F). The data on daily and monthly stock returns, trading volumes and annual accounting information are from Compustat and CRSP. In our later multivariate analyses, all of the sample firms do not have any securities class action lawsuits during the year in which we calculate the litigation-prone large shareholder linkage measure (by construction). The complete sample includes 79521 firm-year observations. For each variable, we report the mean, the median, the standard deviation and the number of observations. The detailed definitions can be found in the appendix.

	Mean	Median	Std. Dev.	N
Litigation Dummy	0.026	0.000	0.160	79521
Litigation-prone Large Shareholder Linkage (Top five Institutional Investors)	0.369	0.338	0.260	79521
Litigation-prone Large Shareholder Linkage (Top 10 Institutional Investors)	0.418	0.405	0.246	79521
Litigation-prone Large Shareholder Linkage (Block01: Institutional ownership>1%)	0.413	0.408	0.264	72604
Litigation-prone Large Shareholder Linkage (Block05: Institutional ownership>5%)	0.282	0.166	0.321	54139
Institutional Ownership (Total)	0.401	0.356	0.308	79521
Large Institutional Ownership (Top five)	0.189	0.185	0.130	79521
Large Institutional Ownership (Top 10)	0.260	0.257	0.178	79521
Large Institutional Ownership (Block01)	0.323	0.296	0.226	72604
Large Institutional Ownership (Block05)	0.175	0.145	0.114	54139
Institutional Turnover	0.543	0.523	0.116	79521
Insider Ownership	0.048	0.008	0.093	79521
FPS Industry Dummy	0.269	0.000	0.443	79521
Firm Size	5.747	5.570	2.228	79521
Book Leverage	0.222	0.169	0.250	79521
Market-to-Book	1.808	1.162	2.120	79521
Profitability	0.029	0.096	0.297	79521
Sales Growth	0.641	0.113	1.613	79521
R&D	0.054	0.000	0.117	79521
Goodwill	0.077	0.002	0.128	79521
Equity Proceeds	0.078	0.005	0.198	79521
Debt Proceeds	0.093	0.002	0.189	79521
Stock Return	0.144	0.028	0.734	79521
Return Volatility	0.159	0.131	0.108	79521
Return Skewness	0.315	0.261	0.753	79521
Amihud Illiquidity	0.443	0.177	0.602	79521
Bidder CAR (-1, +1)	0.002	-0.000	0.059	2854
Forced CEO Turnover Dummy	0.023	0.000	0.149	14868

Table III
Litigation-prone Large Shareholders and Future Litigation Occurrences

In this table, we examine the relation between litigation-prone large shareholder linkage and the probability of future occurrences of securities class action litigations. Specifically, we estimate the following probit model:

$$Litigation\ Dummy_{,t+1} = \alpha + \beta \times LPLS\ linkage_{i,t} + \delta X_{i,t} + \varepsilon_{i,t+1}$$

where the dependent variable is an indicator variable that is equal to one if the firm is being sued in year t+1 and zero otherwise. The main variable of interest is the litigation-prone large shareholder linkage measure, defined as the fraction of holdings by litigation-prone large investors among the firm's top five institutional investors. All the independent variables are taken in year t. The detailed definitions of all the variables can be found in the appendix.

In Panel A, we present the baseline results. Column (1) is the simplest specification without other control variables. In column (2), we control for ownership characteristics including large institutional ownership, other institutional ownership, insider ownership, changes in these ownerships and institutional turnover. We also include year fixed effects. In column (3), we control for firm characteristics including FPS industry dummy, firm size, book leverage, market-to-book, profitability, sales growth, R&D, goodwill, equity proceeds, debt proceeds as well as industry fixed effects at the two-digit SIC level. In column (4), we further control for stock characteristics such as yearly return, return volatility, return skewness and Amihud illiquidity. We cluster the errors at the firm level in all specifications. For each column, we report the conditional marginal effects of litigation-prone large shareholder linkage, as the increase in litigation probability due to one standard deviation increase in litigation-prone large shareholder linkage divided by the predicted litigation probability at the mean.

In Panel B, we predict future litigations while distinguishing large shareholder linkage by the severity of previous litigation cases. Specifically, we separately calculate the litigation-prone large shareholder linkage with more or less severe litigation cases. We measure the severity of litigations either by the case outcome or by the announcement returns around the case filing date. In Panel B-1, we separately calculate the litigation-prone large shareholder linkage measures only based on the settled litigation cases and only based on the dismissed cases. In Panel B-2, we identify the severity of cases by the cumulative abnormal returns during the 3-day window (-1, +1) around the litigation filing date. We define cases with high/low announcement return by the sample median CAR. We separately calculate the litigation-prone large shareholder linkage measures only based on the high CAR (-1,+1) cases and only based on the low CAR (-1,+1) cases. To compare the economic significances, we standardize both linkage variables to have a mean of 0 and a standard deviation of 1 (by subtracting the mean and dividing by the standard deviation, respectively). The dependent variable is an indicator variable that is equal to one if the firm is being sued in year t+1 and zero otherwise. We follow the same specifications as in Panel A, Table IV. For brevity, we only report the coefficients of the interested variables. We test the statistical difference in coefficients of the two linkage measures and report the Chi-square statistics accordingly. ***, ** and * represent significance levels at 1%, 5%, and 10%, respectively, using robust standard errors with t-statistics given in parentheses.

Table III (Continued)

Panel A: Probit Regressions

Dep. Var.: Litigation Dummy	(1)	(2)	(3)	(4)
Litigation-prone Large Shareholder Linkage	0.675***	0.614***	0.399***	0.323***
	(20.18)	(15.56)	(9.42)	(7.03)
Controls				
Large Inst. Ownership		-0.017	0.229**	0.018
		(-0.19)	(2.51)	(0.18)
Other Inst. Ownership		0.881***	0.557***	0.248***
		(16.23)	(8.77)	(3.46)
Insider Ownership		0.859***	0.605***	0.372***
		(9.70)	(6.56)	(3.84)
Change in Large Inst. Ownership		-0.447	-0.801	-1.293
		(-0.44)	(-0.77)	(-0.76)
Change in Other Inst. Ownership		-0.903	-1.219	-1.453
		(-0.86)	(-1.14)	(-0.84)
Change in Insider Ownership		0.800	0.964	1.519
		(0.77)	(0.91)	(0.89)
Institutional Turnover		1.200***	1.059***	0.912***
		(17.40)	(12.98)	(8.84)
FPS Industry Dummy			0.172***	0.150***
			(4.88)	(4.15)
Firm Size			0.110***	0.066***
			(16.98)	(7.85)
Book Leverage			-0.153***	-0.087
			(-2.78)	(-1.60)
Market-to-Book			0.027***	0.018***
			(6.24)	(3.85)
Profitability			-0.062	-0.078
			(-1.44)	(-1.61)
Sales Growth			0.036***	0.027***
			(5.31)	(3.86)
R&D			0.015	-0.146
			(0.12)	(-1.16)
Goodwill			-0.037	0.032
			(-0.43)	(0.38)
Equity Proceeds			0.491***	0.237***
			(8.82)	(3.99)
Debt Proceeds			0.198***	0.167***
			(3.44)	(2.73)
Stock Return				-0.153***
				(-7.21)
Return Volatility				1.741***
				(15.12)
Return Skewness				-0.089***
				(-5.20)
Amihud Illiquidity				-0.936***
				(-9.61)
Year FE	-	Y	Y	Y
Industry FE (2-digit SIC)	-	-	Y	Y
Cluster	Firm	Firm	Firm	Firm
Number of Observations	79,521	79,521	79,521	79,521
Conditional Marginal Effects	41%	38%	26%	22%

Table III (Continued)

Panel B: Distinguish Large Shareholder Linkage by Severity of Litigation Cases

Panel B-1: Large Shareholder Linkage from Settled and Dismissed Cases

Dep. Var.: Litigation Dummy	(1)	(2)	(3)	(4)
Litigation-prone Large Shareholder Linkage (From Settled Cases)	0.126*** (13.57)	0.116*** (10.79)	0.085*** (7.47)	0.072*** (5.85)
Litigation-prone Large Shareholder Linkage (From Dismissed Cases)	0.078*** (8.58)	0.084*** (7.92)	0.049*** (4.36)	0.035*** (2.90)
Same Specification as in Panel A, Table IV	Y	Y	Y	Y
Chi-square Test: Difference in Coefficients	9.75***	3.26*	3.74**	3.51*
Number of Observations	79,521	79,521	79,521	79,521

Panel B-2: Large Shareholder Linkage from Cases with High and Low CARs

Dep. Var.: Litigation Dummy	(1)	(2)	(3)	(4)
Litigation-prone Large Shareholder Linkage (From Cases with Low CAR(-1,+1))	0.138*** (14.25)	0.115*** (10.46)	0.085*** (7.40)	0.071*** (5.71)
Litigation-prone Small Shareholder Linkage (From Cases with High CAR(-1,+1))	0.065*** (6.57)	0.077*** (6.74)	0.042*** (3.56)	0.034*** (2.64)
Same Specification as in Panel A, Table IV	Y	Y	Y	Y
Chi-square Test: Difference in Coefficients	18.14***	3.95**	4.65**	3.07*
Number of Observations	79,521	79,521	79,521	79,521

Table IV
Litigation-prone Large Shareholders and Announcement Returns upon Litigation Filings

In this table, we examine the relation between *Litigation-prone Large Shareholder Linkage* and the market reactions around litigation filing dates. For each firm that is being sued in year t+1, the dependent variable is the 3-day cumulative abnormal returns around the litigation filing date. We use the market model to estimate the abnormal returns with window (-300, -46) before the announcement date as the estimation period. All the independent variables are taken in year t. Column (1) is our baseline specification. In column (2), we control for firm characteristics including FPS industry dummy, firm size, book leverage, market-to-book, profitability and sales growth. In column (3), we further control for stock characteristics such as yearly return, return volatility, return skewness and Amihud illiquidity. In column (4), we include industry fixed effects at the two-digit SIC. We always cluster the standard errors at the industry level. ***, ** and * represent significance levels at 1%, 5%, and 10%, respectively, using robust standard errors with t-statistics given in parentheses.

Dep. Var.: Litigation CAR (-1,+1)	(1)	(2)	(3)	(4)
Litigation-prone Large Shareholder Linkage	-0.032**	-0.037**	-0.041***	-0.040***
	(-2.35)	(-2.62)	(-2.96)	(-2.92)
Controls				
Large Inst. Ownership	-0.024	-0.016	-0.020	-0.016
	(-0.94)	(-0.60)	(-0.78)	(-0.59)
Other Inst. Ownership	0.018	-0.009	-0.003	-0.002
	(0.77)	(-0.42)	(-0.15)	(-0.08)
Insider Ownership	0.024	0.036	0.024	0.037
	(0.92)	(1.36)	(0.90)	(1.50)
Change in Large Inst. Ownership	0.339	-0.509	-0.502	-0.632
	(0.40)	(-0.60)	(-0.62)	(-0.78)
Change in Other Inst. Ownership	0.362	-0.481	-0.450	-0.577
	(0.42)	(-0.57)	(-0.56)	(-0.71)
Change in Insider Ownership	-0.410	0.441	0.443	0.567
	(-0.49)	(0.53)	(0.56)	(0.71)
Institutional Turnover	-0.103***	-0.073**	-0.079**	-0.072**
	(-3.15)	(-2.39)	(-2.36)	(-2.00)
FPS Industry Dummy		0.004	0.002	-0.005
		(0.77)	(0.49)	(-0.66)
Firm Size		0.004**	0.004**	0.004*
		(2.13)	(2.23)	(1.73)
Book Leverage		-0.031	-0.032	-0.018
		(-1.57)	(-1.54)	(-0.85)
Market-to-Book		-0.004***	-0.003**	-0.004**
		(-2.81)	(-2.55)	(-2.51)
Profitability		0.034***	0.043***	0.050***
		(3.05)	(3.59)	(4.01)
Sales Growth		-0.001	-0.001	-0.000
		(-0.48)	(-0.70)	(-0.04)
Stock Return			-0.014**	-0.014**
			(-2.48)	(-2.38)
Return Volatility			0.081**	0.077*
			(2.27)	(1.90)
Return Skewness			-0.001	-0.003
			(-0.37)	(-0.58)
Amihud Illiquidity			-0.011	-0.009
			(-0.62)	(-0.44)
Year FE	Y	Y	Y	Y
Industry FE (2-digit SIC)	-	-	-	Y
Cluster	Industry	Industry	Industry	Industry
Number of Observations	1,914	1,914	1,914	1,914

Table V
Additional Tests: Further Establishing the Litigation-prone Large Shareholder Linkage

In this table, we consider alternative channels or other confounding factors that may explain the previous large shareholder linkage effects in predicting future litigation occurrences. We always follow the same specifications as in Panel A, Table IV. The dependent variable is an indicator variable equal to one if the firm is sued in year t+1 and zero. For each specification, we report the coefficient and the conditional marginal effect of *Litigation-prone Large Shareholder Linkage*.

In Panel A, we consider specifications that help to rule-out alternative economic linkage channels. We perform four sets of tests independently. In Test A-1, we only identify *litigation-prone* large investors holding stocks that are being sued in different industries (different 1-digit SIC code) with respect to the sample firms when we construct the measure of *Litigation-prone Large Shareholder Linkage (LPLS).* In Test A-2, we exclude the interlocking board channel. We use the data on firm directors from the IRRC Risk Metrics database from 1996 to 2010. We exclude all of the sample firms that have one or more common directors with the firms having class action lawsuits in the year when we construct the *LPLS Linkage* measure. In Test A-3, we only identify *litigation-prone* large investors holding stocks that are being sued in different regions with respect to the sample firms when we construct the *LPLS Linkage* measure. We identify the locations of firms by ten regions: New England, Middle Atlantic, East North Central, West North Central, South Atlantic, East South Central, West South Central, Rocky Mountain, Northwest and California. In Test A-4, we perform the analyses by excluding the firms whose suppliers or customers have been subject to securities class action litigations in the previous three years. We identify the supply chain relationship using the Compustat Customer Segments data. In Test A-5, we exclude hedge funds as large institutional shareholders when we construct the *LPLS Linkage* measure. We obtain the list of 13F hedge funds as used in Agarwal, Jiang, Tang and Yang (2013).

In Panel B, we examine the concerns that large shareholders may actively serve as lead plaintiffs in many securities class action litigations. We also provide specifications where we exclude IPO-related litigations as these allegations are less likely to be relevant to monitoring effectiveness of large institutional investors. We perform three sets of tests. In Test B-1, we exclude the class action lawsuits with institutional investors serving as lead plaintiffs, both in the procedure to construct the *Litigation-prone Large Shareholder Linkage*, and from the dependent variable. We identify institutional lead plaintiffs by searching the names of lead plaintiffs with the keywords: “pension”, “management”, “fund”, “administration”, “retirement”, “advisor” and “trust”. In Test B-2, as Cheng et al. (2010) show that retirement and pension funds are the most frequent types of institutions that serve as lead plaintiffs in securities class action litigations, we exclude corporate pension funds and public pension funds when we construct the *Litigation-prone Large Shareholder Linkage* measure. In Test B-3, we exclude the class action lawsuits with IPO-related allegations (i.e., the type of litigation identified as “IPO Allocation”), both in the procedure to construct the *Litigation-prone Large Shareholder Linkage*, and from the dependent variable.

In Panel C, we construct alternative measures of *Litigation-prone Large Shareholder Linkage*. In Test C-1, we follow the same procedure as before, but focus on the top 10 institutional investors of each firm ranked by the amount of holdings of the company’s common stock. In Test C-2, we follow the same procedure as before but focus on the investors with ownership above 1 percent of the firm’s shares outstanding. In Test C-3, we calculate the measure of *Litigation-prone Large Shareholder Linkage* based on large institutional investors with ownership above 5 percent of the firm’s shares outstanding. ***, ** and * represent significance levels at 1%, 5%, and 10%, respectively, using robust standard errors with t-statistics given in parentheses.

Table V (Continued)

Panel A: Excluding Other Linkage Channels

Dep. Var.: Litigation Dummy	Same Specification as in Panel A, Table IV			
Test 1: Excluding Industry Channel	(1)	(2)	(3)	(4)
Litigation-prone Large Shareholder Linkage	0.689***	0.612***	0.400***	0.328***
	(19.50)	(15.59)	(9.46)	(7.17)
Conditional Marginal Effects	41%	38%	26%	23%
Number of Observations	79,521	79,521	79,521	79,521
Test 2: Excluding Interlocking Board Channel	(1)	(2)	(3)	(4)
Litigation-prone Large Shareholder Linkage	0.676***	0.639***	0.450***	0.348***
	(17.71)	(14.27)	(9.42)	(6.73)
Conditional Marginal Effects	40%	38%	28%	23%
Number of Observations	69,085	69,085	69,085	69,085
Test 3: Excluding Regional Channel	(1)	(2)	(3)	(4)
Litigation-prone Large Shareholder Linkage	0.763***	0.698***	0.447***	0.343***
	(19.61)	(14.93)	(8.81)	(6.40)
Conditional Marginal Effects	43%	41%	27%	22%
Number of Observations	65,608	65,608	65,608	65,608
Test 4: Excluding Supply Chain Channel	(1)	(2)	(3)	(4)
Litigation-prone Large Shareholder Linkage	0.629***	0.564***	0.380***	0.299***
	(17.94)	(13.72)	(8.67)	(6.24)
Conditional Marginal Effects	38%	35%	24%	20%
Number of Observations	76,035	76,035	76,035	76,035
Test 5: Excluding Distressed Hedge Fund Channel	(1)	(2)	(3)	(4)
Litigation-prone Large Shareholder Linkage	0.649***	0.570***	0.364***	0.296***
	(20.42)	(16.19)	(9.54)	(7.18)
Conditional Marginal Effects	43%	38%	25%	22%
Number of Observations	79,359	79,359	79,359	79,359

Table V (Continued)

Panel B: Excluding Institutional Plaintiffs and IPO-related Litigations

Dep. Var.: Litigation Dummy	Same Specification as in Panel A, Table IV			
Test 1: Excluding Institutional Lead Plaintiffs	(1)	(2)	(3)	(4)
Litigation-prone Large Shareholder Linkage	0.613***	0.604***	0.451***	0.313***
	(14.79)	(12.18)	(8.52)	(5.45)
Conditional Marginal Effects	35%	35%	27%	20%
Number of Observations	78,734	78,734	78,734	78,734
Test 2: Excluding Retirement and Pension Funds	(1)	(2)	(3)	(4)
Litigation-prone Large Shareholder Linkage	0.655***	0.598***	0.382***	0.304***
	(19.68)	(15.28)	(9.06)	(6.66)
Conditional Marginal Effects	40%	38%	25%	21%
Number of Observations	79,506	79,506	79,506	79,506
Test 3: Excluding IPO-related Litigations	(1)	(2)	(3)	(4)
Litigation-prone Large Shareholder Linkage	0.702***	0.636***	0.419***	0.322***
	(20.19)	(15.49)	(9.53)	(6.84)
Conditional Marginal Effects	42%	39%	27%	22%
Number of Observations	78830	78830	78830	78830

Panel C: Alternative Identification of Large Institutional Investors

Dep. Var.: Litigation Dummy	Same Specification as in Panel A, Table IV			
Test 1: Top 10 Investors	(1)	(2)	(3)	(4)
Litigation-prone Large Shareholder Linkage	0.832***	0.804***	0.522***	0.403***
	(22.69)	(17.85)	(10.82)	(7.51)
Conditional Marginal Effects	48%	47%	32%	26%
Number of Observations	79,521	79,521	79,521	79,521
Test 2: Block Investors (ownership>1%)	(1)	(2)	(3)	(4)
Litigation-prone Large Shareholder Linkage	0.664***	0.677***	0.465***	0.367***
	(19.44)	(16.17)	(10.42)	(7.37)
Conditional Marginal Effects	41%	42%	30%	25%
Number of Observations	72,604	72,604	72,604	72,604
Test 3: Block Investors (ownership>5%)	(1)	(2)	(3)	(4)
Litigation-prone Large Shareholder Linkage	0.394***	0.324***	0.221***	0.162***
	(11.22)	(8.49)	(5.50)	(3.94)
Conditional Marginal Effects	26%	22%	16%	12%
Number of Observations	54,139	54,139	54,139	54,139

Table VI
Predicting Future Short Interest

In this table, we examine the relation between the litigation-prone large shareholder linkage and future Short Interest of the firm's common stocks through the channel of increased litigation risk. Specifically, we estimate a two-stage model. In the first stage, we estimate the following probit model:

$$Litigation\ Dummy_{i,t+1} = \alpha + \beta \times LPLS\ linkage_{i,t} + \varepsilon_{i,t+1},$$

from which we calculate the predicted litigation likelihood explained by the litigation-prone large shareholder linkage. Then, in the second stage, we estimate the following model:

$$Short\ Interest_{i,t+1} = \alpha + \beta \times Predicted\ Litigation\ Likelihood_{i,t+1} + \delta X_{i,t-} + \varepsilon_{i,t+1},$$

where the dependent variable is the Short Interest of the firm in year t+1. The main variable of interest is the predicted litigation likelihood by the litigation-prone large shareholder linkage. All the independent variables are taken in year t. The detailed definitions of all the variables can be found in the appendix. In column (1), we control for ownership characteristics such as large institutional ownership, other institutional ownership, insider ownership, changes in these ownerships and institutional turnover. In column (2), we control for firm characteristics including FPS industry dummy, firm size, book leverage, market-to-book, profitability, sales growth, R&D, goodwill, equity proceeds, debt proceeds as well as industry fixed effects at the two-digit SIC level. In column (3), we further control for stock characteristics such as yearly return, return volatility, return skewness and Amihud illiquidity. In column (4), we include firm fixed effects. We include year fixed effects and cluster the errors at the firm level in all specifications. ***, ** and * represent significance levels at 1%, 5%, and 10%, respectively, using robust standard errors with t-statistics given in parentheses.

Dep. Var.: Short Interest	(1)	(2)	(3)	(4)
Predicted Litigation Likelihood	1.122***	0.764***	0.617***	0.410***
(By Litigation-prone Large Shareholder Linkage)	(9.13)	(7.09)	(5.93)	(4.75)
Controls				
Large Inst. Ownership	1.711***	1.906***	1.196***	2.920***
	(7.51)	(8.84)	(5.71)	(10.90)
Other Inst. Ownership	5.559***	5.627***	5.060***	6.464***
	(35.62)	(33.34)	(30.24)	(27.26)
Insider Ownership	0.106	-0.253	-0.620***	-0.555***
	(0.52)	(-1.29)	(-3.23)	(-2.74)
Change in Large Inst. Ownership	2.295	1.634	0.873	0.570
	(0.56)	(0.44)	(0.25)	(0.19)
Change in Other Inst. Ownership	2.918	2.159	1.292	0.942
	(0.71)	(0.57)	(0.37)	(0.30)
Change in Insider Ownership	-0.102	0.357	1.051	1.690
	(-0.02)	(0.10)	(0.30)	(0.55)
Institutional Turnover	2.417***	1.434***	0.522***	-0.094
	(13.13)	(8.03)	(3.17)	(-0.55)
FPS Industry Dummy		-0.010	-0.034	0.078
		(-0.10)	(-0.37)	(0.48)
Firm Size		0.033*	-0.082***	0.185***
		(1.94)	(-4.25)	(3.40)
Book Leverage		0.640***	0.773***	0.961***
		(5.50)	(6.82)	(5.31)
Market-to-Book		0.222***	0.157***	0.150***
		(12.85)	(9.17)	(8.07)
Profitability		0.330***	0.194*	0.085
		(3.21)	(1.96)	(0.75)
Sales Growth		0.021	-0.014	0.057**
		(0.88)	(-0.60)	(2.33)

R&D		1.697***	1.185***	-0.034
		(5.00)	(3.65)	(-0.07)
Goodwill		-0.936***	-0.895***	-0.364
		(-4.84)	(-4.83)	(-1.35)
Equity Proceeds		0.990***	0.400***	0.308**
		(7.43)	(3.10)	(2.27)
Debt Proceeds		0.447***	0.332***	0.373***
		(3.70)	(2.92)	(3.53)
Stock Return			0.078***	0.034*
			(3.44)	(1.65)
Return Volatility			4.555***	2.530***
			(20.97)	(11.55)
Return Skewness			-0.104***	-0.054***
			(-5.62)	(-3.24)
Amihud Illiquidity			-1.305***	-0.291***
			(-23.78)	(-5.68)
Year FE	Y	Y	Y	Y
Industry FE (2-digit SIC)	-	-	Y	-
Firm FE	-	-	-	Y
Cluster	Firm	Firm	Firm	Firm
R-squared	0.249	0.291	0.318	0.670
Number of Observations	50,692	50,692	50,692	50,692

Table VII
Litigation-prone Large Shareholders and Non-Litigation Related Governance Outcomes

In this table, we examine the relation between *Litigation-prone Large Shareholder Linkage* and other non-litigation related corporate governance outcomes commonly used in the literature. Specifically, we focus on the bidder announcement returns in mergers and CEO turnover-performance sensitivity.

In Panel A, we focus on the bidder announcement return. We estimate the following OLS model:

$$Bidder\ CAR(-1,+1)_{i,t+1} = \alpha + \beta \times LPLS\ linkage_{i,t} + \delta X_{i,t} + \varepsilon_{i,t+1}$$

where the dependent variable is the 3-day cumulative abnormal returns of the bidder around the merger announcement date in year t+1. We use the market model to estimate the abnormal returns with window (-300, -46) before the announcement date as the estimation period. We obtain the data on mergers from SDC Platinum's M&A database for the period of 1994 to 2010. We require the deal value to be more than 50 million dollars. We always control for major deal characteristics: *Deal Value, as* the logarithm of the dollar value of the merger; *Tender Offer Dummy, as* a dummy variable equal to one if the merger is a tender offer and zero otherwise; *Cash Offer Dummy, as* a dummy variable equal to one if the method of payment is only by cash and zero otherwise; *Same Industry Dummy, as* a dummy variable equal to one if the target and the bidder have the same two-digit SIC industry code. We always cluster the errors at the year level. All the independent variables are taken in year t. In column (2), we control for ownership characteristics such as large institutional ownership, other institutional ownership, insider ownership, changes in these ownerships and institutional turnover. In column (3), we control for firm characteristics including FPS industry dummy, firm size, book leverage, market-to-book, profitability, sales growth as well as industry fixed effects at the two-digit SIC level. In column (4), we further control for stock characteristics such as yearly return, return volatility, return skewness and Amihud illiquidity.

In Panel B, we focus on the forced CEO turnover-performance sensitivity. We estimate the following probit model:

$$Forced\ CEO\ Turnover_{i,t+1} = \alpha + \beta \times Stock\ Return_{i,t} \times High\ Linkage\ Dummy_{i,t} + \delta X_{i,t} + \varepsilon_{i,t+1}$$

where the dependent variable is the forced CEO turnover dummy in year t+1. We obtain the data on forced CEO turnovers for firms in the S&P ExecuComp database between 1993 and 2010 from Jenter and Kanaan (2015) and Peters and Wagner (2014). The variable of interest is the interaction term between stock return and a high linkage dummy. In each year, we first regress the *Litigation-prone Large Shareholder Linkage* measure on the complete set of control variables as in column (4), and we obtain the regression residuals. Then, we define the high linkage dummy to be 1 if the regression residual is above the sample median and zero otherwise. We always control for major CEO characteristics: *CEO Tenure,* as the logarithm of the number of years since the CEO resumes office; *CEO Age,* as the logarithm of the CEO's age; CEO *Chairman,* as a dummy variable that is equal to one if the CEO is also the chairman of the board and zero otherwise. We obtain the information from the annual job titles of the CEO; CEO *Founder,* as a dummy variable that is equal to one if the CEO is the same CEO when the firm first appears in the ExecuComp database and zero otherwise; *CEO Ownership,* as the number of stocks held by the CEO divided by the number of shares outstanding. All the independent variables are taken in year t. In column (2), we control for ownership characteristics such as large institutional ownership, other institutional ownership, insider ownership, changes in these ownerships and institutional turnover. In column (3), we control for firm characteristics including FPS industry dummy, firm size, book leverage, market-to-book, profitability, sales growth as well as industry fixed effects at the two-digit SIC level. In column (4), we further control for stock characteristics such as yearly return, return volatility, return skewness and Amihud illiquidity. We always cluster the errors at the firm level. ***, ** and * represent significance levels at 1%, 5%, and 10%, respectively, using robust standard errors with t-statistics given in parentheses.

Table VII (Continued)

Panel A: Merger Announcement Returns

Dep. Var.: Bidder CAR (-1,+1)	(1)	(2)	(3)	(4)
Litigation-prone Large Shareholder Linkage	-0.019***	-0.013***	-0.013***	-0.013***
	(-4.09)	(-2.89)	(-2.94)	(-2.77)
Controls				
Deal Value	-0.004***	-0.003**	-0.003***	-0.003***
	(-3.37)	(-2.62)	(-2.72)	(-3.27)
Tender Offer	-0.001	-0.000	-0.000	0.001
	(-0.47)	(-0.04)	(-0.09)	(0.37)
Cash Offer	0.008***	0.009***	0.009***	0.007***
	(4.30)	(4.82)	(4.73)	(3.96)
Same Industry	-0.004	-0.005*	-0.005*	-0.002
	(-1.43)	(-1.84)	(-1.82)	(-0.92)
Large Inst. Ownership	0.008	-0.007	-0.004	-0.005
	(0.61)	(-0.45)	(-0.25)	(-0.33)
Other Inst. Ownership	0.006	0.010	0.014**	0.010
	(0.78)	(1.22)	(2.05)	(1.55)
Insider Ownership	0.013	0.011	0.011	0.008
	(1.12)	(0.95)	(0.97)	(0.75)
Change in Large Inst. Ownership	1.076***	1.066***	1.072***	1.070***
	(4.29)	(4.38)	(4.22)	(3.62)
Change in Other Inst. Ownership	1.063***	1.051***	1.056***	1.057***
	(4.27)	(4.31)	(4.14)	(3.57)
Change in Insider Ownership	-1.066***	-1.056***	-1.060***	-1.058***
	(-4.31)	(-4.37)	(-4.20)	(-3.61)
Institutional Turnover	-0.011	-0.020	-0.015	-0.017
	(-0.63)	(-1.01)	(-0.77)	(-0.88)
FPS Industry Dummy		-0.001	-0.001	-0.001
		(-0.53)	(-0.43)	(-0.26)
Firm Size		-0.002***	-0.002	-0.001
		(-2.75)	(-1.44)	(-1.00)
Book Leverage		0.014**	0.013**	0.011
		(2.65)	(2.45)	(1.56)
Market-to-Book		-0.001*	-0.001	-0.000
		(-1.72)	(-1.59)	(-0.90)
Profitability		0.018*	0.019	0.014
		(1.67)	(1.65)	(1.14)
Sales Growth		0.001	0.001	0.000
		(1.54)	(1.48)	(0.36)
Stock Return			-0.000	0.001
			(-0.07)	(0.28)
Return Volatility			0.007	0.015
			(0.37)	(0.71)
Return Skewness			-0.003**	-0.003**
			(-2.26)	(-2.13)
Amihud Illiquidity			0.015	0.011
			(1.26)	(0.90)
Year FE	Y	Y	Y	Y
Industry FE (2-digit SIC)	-	-	-	Y
Cluster	Industry	Industry	Industry	Industry
Number of Observations	2,854	2,854	2,854	2,854

Table VII (Continued)

Panel B: Forced CEO Turnover-Performance Sensitivity

Dep. Var.: Forced CEO Turnover Dummy	(1)	(2)	(3)	(4)
Stock Return	-0.571***	-0.553***	-0.515***	-0.509***
	(-5.95)	(-5.97)	(-5.93)	(-6.13)
Stock Return × High Linkage Dummy	0.321***	0.308***	0.287***	0.270***
	(3.01)	(3.02)	(3.08)	(3.03)
Controls				
High Linkage Dummy	0.041	0.040	0.046	0.048
	(0.99)	(0.98)	(1.14)	(1.19)
CEO Tenure	0.025	0.032	0.035	0.039
	(0.86)	(1.11)	(1.17)	(1.31)
CEO Age	-0.648***	-0.592***	-0.482***	-0.459***
	(-4.05)	(-3.69)	(-2.88)	(-2.73)
Founder CEO Dummy	-2.031***	-2.258***	-2.293***	-2.220***
	(-3.08)	(-3.22)	(-3.15)	(-2.99)
Chairman CEO Dummy	-0.206***	-0.233***	-0.235***	-0.242***
	(-4.04)	(-4.48)	(-4.24)	(-4.34)
CEO Ownership	-0.172***	-0.152***	-0.151***	-0.151***
	(-4.14)	(-3.60)	(-3.46)	(-3.44)
Large Inst. Ownership		0.037	-0.056	-0.039
		(0.17)	(-0.25)	(-0.17)
Other Inst. Ownership		-0.302**	-0.250	-0.049
		(-1.98)	(-1.51)	(-0.28)
Insider Ownership		-0.243	-0.224	-0.281
		(-0.64)	(-0.58)	(-0.74)
Change in Large Inst. Ownership		7.718	8.608	8.617
		(0.86)	(0.90)	(0.94)
Change in Other Inst. Ownership		7.475	8.386	8.381
		(0.83)	(0.88)	(0.91)
Change in Insider Ownership		-7.689	-8.476	-8.394
		(-0.85)	(-0.89)	(-0.92)
Institutional Turnover		1.354***	0.779**	0.566
		(3.94)	(2.12)	(1.50)
FPS Industry Dummy			0.237***	0.213***
			(3.05)	(2.74)
Firm Size			0.009	0.030*
			(0.56)	(1.79)
Book Leverage			0.168*	0.135
			(1.68)	(1.27)
Market-to-Book			-0.023	-0.016
			(-1.41)	(-0.98)
Profitability			-0.405***	-0.271*
			(-2.88)	(-1.91)
Sales Growth			0.008	0.004
			(0.38)	(0.20)
Return Volatility				1.220***
				(4.19)
Return Skewness				-0.023
				(-0.71)
Amihud Illiquidity				0.309**
				(2.18)
Year FE	Y	Y	Y	Y
Industry FE	-	-	Y	Y
Cluster	Firm	Firm	Firm	Firm
Number of Observations	14,868	14,868	14,868	14,868

Table VIII
Litigation-Prone Large Shareholders

In this table, we present summary statistics of our sample of large institutional investors and their portfolio holdings of litigation stocks. For each firm, we identify large shareholders as the top five institutional investors ranked by the amount of holdings of the company's common stock. To study the large shareholder linkage effects, we require a minimum of 10 stocks in each large investor's portfolio.

In Panel A, we report the size of the portfolio holdings of large institutional investors and the fraction of holdings in stocks that are subject to securities class action litigations in the year. We separately report the statistics for the large shareholders holding at least one litigation stocks. Among these investors, we identify an investor as the "litigation-prone" large shareholder if the fraction of holdings of litigation stocks in its portfolio is above the sample median fraction.

In Panel B, we compare the operation risk of litigation prone large shareholders with those of other non-litigation-prone large shareholders. We use two measure of operational risk from Dimmock, Farizo, and Gerkin (2017) that estimates a probability of fraud for each investment management for the entire period (2001 to 2016) and for each investment management/year observation.

In Panel C, we compare the portfolio returns of the litigation-prone large shareholders with the returns of other non-litigation-prone large shareholders. We calculate both the raw portfolio return for each investor-quarter as the weighted average return of the investor's portfolio using the previous-quarter end holdings value as the weight. We also follow the methodology of Daniel, Grinblatt, Titman and Wermers (1997) to calculate the DGTW adjusted portfolio returns. In every quarter t, and for each institutional investor j, we calculate the adjusted portfolio return as $\mathrm{DGTW}_{j,t} = \sum_{i=1}^{N} \omega_{i,t-1} \left(\mathrm{Ret}_{i,t} - \mathrm{Benchhmark}_{i,t}\right)$, where $\omega_{i,t-1}$ is the portfolio weight on stock i at the end of quarter t-1, $\mathrm{Ret}_{i,t}$ is the quarter t return of stock i, and $\mathrm{Benchhmark}_{i,t}$ is the quarter t return of the characteristic-based benchmark portfolio that is matched to stock i along the dimensions of size (market value of equity), book-to-market ratio, and momentum. We perform both t-tests and Wilcoxon tests to compare the differences in the mean and median values.

In Panel D, we distinguish the litigation-prone large shareholders by investor type and report the summary statistics accordingly. We follow the investor type classifications from 13F and classify institutional investors into: bank trust, insurance company, investment company, independent investment advisor, corporate pension fund, public pension fund, university and foundation endowments, and the rest (miscellaneous). We use the investor type classification obtained from Brian Bushee's website.

Table VIII (Continued)

Panel A: Identification of Litigation-prone Large Shareholders

	Size of Portfolio Holdings ($millions)		Portfolio Fraction of Litigation Stocks		Number of Obs. (Quarter)
	Mean	Median	Mean	Median	
Large Institutional Shareholders	6525.34	301.88	2.46%	0	35087
Large Institutional Shareholders (holds at least one litigation stocks)	15888.05	1258.43	6.55%	3.46%	13153
Litigation-prone Large Shareholders (holds at least one litigation stocks)	21314.30	993.18	11.67%	7.90%	6593
Other Large Shareholders (holds at least one litigation stocks)	10434.49	1614.94	1.41%	1.10%	6560

Panel B: Operational Risk of Litigation-prone Large Shareholders

	Probability of Fraud: Measure 1			Probability of Fraud: Measure 2		
	Mean	Median	N	Mean	Median	N
Litigation-prone Large Shareholders	7.11%	5.11%	499	2.19%	1.58%	2254
Other Large Shareholders	5.63%	3.61%	1453	1.98%	1.34%	9926
T-test (mean) or Wilcoxon-test (median)	5.18***	4.60***		4.98***	5.28***	

Panel C: Quarterly Portfolio Returns of Litigation-prone Large Shareholders

	Raw Return		DGTW-adjusted Return		Number of Obs. (Quarter)
	Mean	Median	Mean	Median	
Litigation-prone Large Shareholders	2.52%	3.43%	0.14%	-0.06%	6434
Other Large Shareholders	3.13%	3.92%	0.30%	0.03%	27174
T-test (mean) or Wilcoxon-test (median)	-3.88***	-2.96***	-2.50**	-3.25***	

Panel D: Litigation-prone Large Shareholders by Investor Type

	Size of Portfolio Holdings ($millions)		Portfolio Percentage of Litigation Stocks		Number of Obs. (Quarter)
	Mean	Median	Mean	Median	
University endowments	3612.58	1757.57	8.15%	7.23%	18
Corporate pension fund	1921.73	973.49	20.29%	11.91%	26
Public pension fund	1566.64	346.44	14.80%	5.68%	81
Insurance company	42963.78	4725.84	11.32%	7.99%	203
Miscellaneous	8391.20	656.03	13.82%	9.25%	289
Bank trust	100840.60	14402.50	14.44%	7.92%	441
Investment company	71396.07	13510.13	8.86%	7.10%	641
Independent investment advisor	7786.09	633.57	11.59%	8.05%	4816

Table IX
Litigation-prone Large Shareholders: Monitoring Incentives

In this table, we examine the large shareholder governance channel that explains the relation between the *Litigation-prone Large Shareholder Linkage* and the probability of future securities class action litigations.

In Panel A, we distinguish large institutional shareholders (top five) by their holding periods of stocks. For each stock, we identify investors with long and short holding periods in the stock by the median holding period among its large shareholders. Then, we separately calculate the litigation-prone large shareholder linkage measures based on the ones with long holding periods and those with short holding periods.

In Panel B, we distinguish large institutional shareholders (top five) by their types. We divide institutions into two groups: independent institutions (investment companies, independent investment advisors, public pension funds) and grey institutions (bank trusts, insurance companies, corporate pension funds, and other institutions). Then, we separately calculate the litigation-prone large shareholder linkage measures based on the independent institutions and the grey institutions.

In Panel C, we consider the linkage effects from both large shareholders and relatively smaller shareholders. For each firm, we identify large (small) shareholders as the top five (top 10 but none-top five) institutional investors ranked by the amount of holdings of the company's common stock. We follow the same methodology (as detailed in the appendix) to construct the measures of litigation-prone small shareholder linkage.

In all three panels, to compare the economic significances, we standardize the linkage variables to have a mean of 0 and a standard deviation of 1 (by subtracting the mean and dividing by the standard deviation, respectively). In columns (1)-(4), we follow the same specifications as in Panel A, Table IV. The dependent variable is an indicator variable that is equal to one if the firm is being sued in year t+1 and zero otherwise. For brevity, we only report the coefficients of the interested variables. In each panel, we test the statistical difference in coefficients of the two linkage measures and report the Chi-square statistics accordingly. ***, ** and * represent significance levels at 1%, 5%, and 10%, respectively, using robust standard errors with t-statistics given in parentheses.

Table IX (Continued)

Panel A: Large Shareholder Linkages: Long and Short Holding Period

Dep. Var.: Litigation Dummy	(1)	(2)	(3)	(4)
Litigation-prone Large Shareholder Linkage	0.139***	0.125***	0.080***	0.062***
(Investors with Long Holding Period)	(13.14)	(10.29)	(6.25)	(4.57)
Litigation-prone Large Shareholder Linkage	0.048***	0.035***	0.027**	0.021*
(Investors with Short Holding Period)	(4.88)	(3.42)	(2.57)	(1.86)
Same Specification as in Panel A, Table IV	Y	Y	Y	Y
Chi-square Test: Difference in Coefficients	38.80***	31.36***	9.87***	5.48**
Number of Observations	50,819	50,819	50,819	50,819

Panel B: Large Shareholder Linkages: Independent and Grey Investors

Dep. Var.: Litigation Dummy	(1)	(2)	(3)	(4)
Litigation-prone Large Shareholder Linkage	0.160***	0.138***	0.084***	0.068***
(Independent Investors)	(17.23)	(12.75)	(7.26)	(5.53)
Litigation-prone Large Shareholder Linkage	0.052***	0.043***	0.034***	0.018
(Grey Investors)	(4.82)	(3.82)	(2.88)	(1.49)
Same Specification as in Panel A, Table IV	Y	Y	Y	Y
Chi-square Test: Difference in Coefficients	51.56***	34.21***	8.81***	7.89***
Number of Observations	64,696	64,696	64,696	64,696

Panel C: Large and Small Shareholder Linkages

Dep. Var.: Litigation Dummy	(1)	(2)	(3)	(4)
Litigation-prone Large Shareholder Linkage	0.184***	0.165***	0.109***	0.081***
(Top five Institutional Investors)	(19.05)	(14.79)	(9.13)	(6.49)
Litigation-prone Small Shareholder Linkage	-0.043***	0.010	0.006	0.018
(Top 10 but None-top five Institutional Investors)	(-4.72)	(0.99)	(0.52)	(1.29)
Same Specification as in Panel A, Table IV	Y	Y	Y	Y
Chi-square Test: Difference in Coefficients	251.21***	94.95***	34.62***	9.29***
Number of Observations	72,371	72,371	72,371	72,371

Online Appendix

Table 1: Conditional Logit Regressions with Firm Fixed Effects

In this table, we examine the relation between litigation-prone large shareholder linkage and the probability of future securities class action litigations, by using a conditional logit specification with the inclusion of firm fixed effects. We cluster the errors at the firm level in all specifications. ***, ** and * represent significance levels at 1%, 5%, and 10%, respectively, using robust standard errors with t-statistics given in parentheses.

Dep. Var.: Litigation Dummy	(1)	(2)	(3)	(4)
Litigation-prone Large Shareholder Linkage	1.081***	1.076***	1.011***	0.857***
	(8.62)	(9.43)	(8.56)	(7.10)
Controls				
Large Inst. Ownership		0.372	-0.005	-0.205
		(1.03)	(-0.01)	(-0.52)
Other Inst. Ownership		2.087***	0.081	-0.204
		(9.42)	(0.31)	(-0.74)
Insider Ownership		1.712***	0.877***	0.688**
		(5.70)	(2.63)	(2.01)
Change in Large Inst. Ownership		-0.222	-3.814	-2.753
		(-0.02)	(-0.23)	(-0.18)
Change in Other Inst. Ownership		-1.041	-4.468	-2.997
		(-0.08)	(-0.26)	(-0.20)
Change in Insider Ownership		0.278	3.584	2.654
		(0.02)	(0.21)	(0.17)
Institutional Turnover		1.361***	1.514***	0.767*
		(4.09)	(4.10)	(1.92)
FPS Industry Dummy			0.161	0.157
			(0.87)	(0.85)
Firm Size			1.077***	0.829***
			(17.88)	(13.22)
Book Leverage			-0.264	-0.176
			(-1.32)	(-0.88)
Market-to-Book			0.070***	0.059***
			(5.67)	(4.47)
Profitability			-0.225	-0.336*
			(-1.21)	(-1.78)
Sales Growth			0.074***	0.050*
			(2.78)	(1.82)
R&D			1.136**	1.058*
			(2.16)	(1.96)
Goodwill			-1.801***	-1.499***
			(-5.37)	(-4.43)
Equity Proceeds			0.373**	-0.118
			(2.40)	(-0.72)
Debt Proceeds			0.317*	0.229
			(1.65)	(1.17)
Stock Return				-0.196***
				(-5.04)
Return Volatility				2.195***
				(6.78)
Return Skewness				-0.142***
				(-3.44)
Amihud Illiquidity				-2.498***
				(-9.33)
Year FE, Firm FE	Y	Y	Y	Y
Cluster	Firm	Firm	Firm	Firm
Number of Observations	15,669	15,669	15,669	15,669

Table 2: Results using Large Shareholders Present One Year Earlier

In this table, when constructing the *Litigation-prone Large Shareholder Linkage* measure, we only focus on large shareholders that were present (also as top 5 institutional shareholders) one year earlier. We re-estimate the regressions with the same specifications as used in the main tables. For brevity, we mute the control variables and only report the variables of interest.

Panel A: Litigation Risk

Dep. Var.: Litigation Dummy	(1)	(2)	(3)	(4)
Litigation-prone Large Shareholder Linkage	0.524***	0.440***	0.285***	0.211***
	(16.69)	(12.51)	(7.63)	(5.46)
Same Specifications as in Table IV, Panel A	Y	Y	Y	Y

Panel B: Litigation Announcement Returns

Dep. Var.: Litigation CAR (-1,+1)	(1)	(2)	(3)	(4)
Litigation-prone Large Shareholder Linkage	-0.015	-0.019*	-0.023*	-0.023*
	(-1.38)	(-1.71)	(-1.90)	(-1.82)
Same Specifications as in Table VII	Y	Y	Y	Y

Panel C: Merger Announcement Returns

Dep. Var.: Bidder CAR (-1,+1)	(1)	(2)	(3)	(4)
Litigation-prone Large Shareholder Linkage	-0.020***	-0.021***	-0.017***	-0.017***
	(-4.84)	(-4.76)	(-3.34)	(-3.37)
Same Specifications as in Table VIII, Panel A	Y	Y	Y	Y

Panel D: Forced CEO Turnover-Performance Sensitivity

Dep. Var.: Forced CEO Turnover Dummy	(1)	(2)	(3)	(4)
Stock Return	-0.474***	-0.475***	-0.441***	-0.439***
	(-5.60)	(-5.86)	(-5.79)	(-6.04)
Stock Return × High Linkage Dummy	0.191*	0.184*	0.178**	0.166**
	(1.87)	(1.90)	(2.00)	(1.97)
High Linkage Dummy	0.016	0.016	0.014	0.013
	(0.41)	(0.40)	(0.36)	(0.32)
Same Specifications as in Table VIII, Panel B	Y	Y	Y	Y

Table 3: Results using Litigation-prone Large Shareholder Ownership

In this table, instead of using the *Litigation-prone Large Shareholder Linkage* measure (expressed as a fraction of large shareholder holdings), we use the ownership of litigation-prone large shareholders relative to the amount of firms' common shares outstanding. We re-estimate the regressions with the same specifications as used in the main tables. For brevity, we mute the control variables and only report the variables of interest.

Panel A: Litigation Risk

Dep. Var.: Litigation Dummy	(1)	(2)	(3)	(4)
Litigation-prone Large Shareholder Ownership	1.811***	2.061***	1.229***	1.006***
	(17.92)	(11.97)	(6.97)	(5.48)
Same Specifications as in Table IV, Panel A	Y	Y	Y	Y

Panel B: Litigation Announcement Returns

Dep. Var.: Litigation CAR (-1,+1)	(1)	(2)	(3)	(4)
Litigation-prone Large Shareholder Ownership	-0.150**	-0.164**	-0.178***	-0.179***
	(-2.39)	(-2.55)	(-2.74)	(-2.65)
Same Specifications as in Table VII	Y	Y	Y	Y

Panel C: Merger Announcement Returns

Dep. Var.: Bidder CAR (-1,+1)	(1)	(2)	(3)	(4)
Litigation-prone Large Shareholder Ownership	-0.036***	-0.077***	-0.062***	-0.062***
	(-3.10)	(-3.94)	(-3.11)	(-3.19)
Same Specifications as in Table VIII, Panel A	Y	Y	Y	Y

Panel D: Forced CEO Turnover-Performance Sensitivity

Dep. Var.: Forced CEO Turnover Dummy	(1)	(2)	(3)	(4)
Stock Return	-0.520***	-0.505***	-0.468***	-0.463***
	(-5.95)	(-6.00)	(-5.96)	(-6.15)
Stock Return × High Ownership Dummy	0.245**	0.236**	0.217**	0.200**
	(2.39)	(2.42)	(2.44)	(2.34)
High Ownership Dummy	0.051	0.049	0.058	0.061
	(1.25)	(1.20)	(1.44)	(1.51)
Same Specifications as in Table VIII, Panel B	Y	Y	Y	Y